First Copy

"A National Newspaper for Every Branch of the Industry"

Automotive Daily News

PASSENGER TRUCK PARTS, SHOP EQUIPMENT TIRES ACCESSORIES

Vol. 7. No. 830. Copyright, 1928, by Automotive Daily News Publishing Corporation NEW YORK, FRIDAY, NOVEMBER 23, 1928 Entered as second-class matter Aug. 27, 1925, Post Office, N. Y., N. Y., Under Act of March 2, 1879. 10 Cents. $12 per year.

OCTOBER OUTPUT, PASSENGER CARS, TOTALS 341,705

10 Months' Production Breaks Previous High Mark

By FRANCIS P. DAILY

WASHINGTON, Nov. 22.—Although there was a slight decrease in October, as compared with September, passenger car production in the first ten months of this year has reached a total of 3,505,942 units, as against 2,730,760 in the same period of last year, when the total output for the whole twelve months registered 2,946,661.

October production, based on factory sales, as reported to the automotive division of the Department of Commerce, totaled 341,705 passenger cars, as against 358,872 in the previous month, while the output of trucks amounted to 37,113, a slight gain over September.

Canadian production of both passenger cars and trucks also has maintained a consistent upward trend, the output for the first ten months being far in excess of last year's output. A total of 181,849 passenger cars and 39,339 trucks was produced in Canada thus far this year, as against 146,627 and 32,227, respectively, in the whole of 1927.

The following figures were re-

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BUICK MOTOR OFFICIALS SUPPORT TRAFFIC MEASURE

Flint, Mich, Nov. 22.—Believing that the model municipal traffic ordinance recently adopted by the National Conference on Street and Highway Safety, under the direction of President-elect Herbert Hoover, represents a forward step in motor transportation, E. T. Strong, president, and other executives of the Buick Motor Company have rallied to the support of the new measure.

SPORT ROADSTER ADDED TO DODGE SENIOR 6 LINE

Detroit, Nov. 22.—A sport roadster with rumble seat, priced at $1,815, has been added to the Senior Six lines of Dodge Brothers. This brings the Senior line to a total of seven body types, coupe and sport coupe, sedan and sport sedan, Victoria, brougham, landau sedan, and the new sport roadster.

The seat in the new car is of unusual width, accommodating three passengers, and upholstery is in black leather. Four Lovejoy shock absorbers and 31x6 balloon tires are standard, and all exterior hardware is chrome plated.

N. A. F. C. Reaches 'Dealer Coercion' Issue Agreement

New York, Nov. 22.—The fifth annual conference of the National Association of Finance Companies ended here late yesterday after hearing a report that a satisfactory agreement regarding so-called "dealer coercion" by manufacturers had been reached with representatives of the automobile makers.

The alleged action of certain manufacturers in forcing their dealers to sell their time payment contracts to specified finance companies threatened for a time to cause some "fireworks" in the conference. A committee of the N. A. F. C. conferred with representatives of manufacturers having their own credit organizations for the two days of the meetings, and reported just before the adjournment that progress had been made toward a satisfactory settlement of the issue.

Assurances were received from officials of the various finance companies operated by car manufacturers that dealers would be left free to sell their "paper" wherever they wanted to.

Directors re-elected yesterday were L. M. Seiver of the Automobile Banking Corporation, Philadelphia; V. G. Dunnington of the Manufacturers' Finance Company, Baltimore; D. L. Barnes of the American Investment Company, Springfield, Ill.; L. M. Rocheford of the Northern Finance Company,

(Continued on page 7)

ALVAN MACAULEY, president of Packard, whose eighteenth anniversary with the company was observed at a dinner in Detroit Wednesday night where he was guest of honor. See story on page 7.

TIRE DEALERS HEAR F. C. HOOD

Local Rubber Institute Urged for Each Community

By F. N. HOLLINGSWORTH

Boston, Nov. 22.—Formation of a local rubber institute in each community where there are a number of tire dealers and members of the National Tire Dealers' Association was urged on the national body in an address here yesterday by Frederick C. Hood, president of the Hood Rubber Company.

One of its purposes, he said, would be to adopt a code of practices that can be approved by the Federal Trade Commission, and then those persons, whether members of the institute or not, who willfully disregarded that code could be investigated by the commission.

"Start a local institute in each of your communities. Invite cooperation of the local chapter of the National Association of Cost Accountants. Find the operating costs of your business, especially unit of dollar costs, and add those costs to the cost of your tires and then make your percentage for your profits. Find what the waste is, wasted time and effort, and work to promote things that pay and cut those that are losers, or make them earners. Help your competitors to make money and they will help you. All pull together to help the automobile owner get good mileage from his tires, to make him realize that your personal service is worth his paying for and that he probably pays more for this service when he tries to perform it himself.

"One of your wastes is in the depreciation of your stock, both through price declines and because of absolute sizes. It is unfair to you not to know in advance when price changes will take place. And you have a right to insist that the manufacturer warn you in time. I urge your association to study the suggestion that November 1 and May 1 should be the dates for announcing prices. An open-price

(Continued on page 7)

S. A. E. PRODUCTION MEETING OPENS IN DETROIT WITH 760 MEMBERS ATTENDING

Papers on First Day Cover Methods, New Machines and Advances Made During Year

DETROIT, Nov. 22.—Exceeding previous expectations, the annual production meeting of the Society of Automotive Engineers opened at the Book-Cadillac Hotel here this morning with 760 members in attendance.

Today's meeting, as other meetings in the past, was featured by the presentation of a number of valuable technical papers covering the advances in production methods and with some looking into the future.

Tonight's production dinner was one of the largest gatherings of the kind ever held. There were well over six hundred guests, filling not only the main ballroom, but the balconies and the anteroom as well. A program of music and other entertainment preceded the address made by the speaker of the evening, K. T. Keller, general manager of the Dodge Brothers division of the Chrysler Corporation. A digest of Mr. Keller's remarks appears in another column.

Mr. Keller was introduced by B. J. Lemon, United States Rubber Company, who is chairman of the Detroit section this year.

Noted at the speakers' table were G. W. Wall, president of the S. A. E.; W. R. Strickland, Cadillac Motor Car Company, the president-elect; C. F. Clarkson, the society's general manager; E. P. Blanchard, Bullard Machine Tool Company, Bridgeport, Conn., who is chairman of the present production meeting; J. M. Crawford, Chevrolet Motor Company, chairman of the meetings committee of the Detroit section, and S. P. Thacher, second vice-president of the United States Rubber Company.

Mr. Keller based his talk on "Production—Men, Methods and Machines." He dealt more particularly with a phase of automotive

(Continued on Page 8)

October Sales for G. M. 140,883 Cars

New York, Nov. 22.—During the month of October General Motors dealers delivered to consumers 140,833 cars, according to an announcement by Alfred P. Sloan, Jr., president. This compares with 153,833 for the corresponding month last year. Sales by General Motors divisions to dealers totaled 120,876 cars, as compared with 125,459 for October, 1927.

Attention is called to the fact that both retail sales to consumers and wholesale sales to dealers show a decline as compared with the corresponding month of last year, which is at variance with the trend up to October 1, which has shown an increase for the year of approximately 22 per cent. in wholesale and 24 per cent. in retail sales.

This apparent change in trend is occasioned by the Chevrolet and Oakland divisions. Chevrolet has been preparing for the advent of the new six-cylinder model, recently announced. Due to delay in production of the new All American Six of the Oakland division there have been no Oakland cars available for retail delivery. Other divisions, being not likewise affected, are following the normal trend. November production and sales records will be affected in a somewhat similar manner.

Chevrolet Awards Nagel Co. $11,000,000 Instrument Job

Toledo, Nov. 22.—A contract involving more than $11,000,000 for the next year has been received by the W. G. Nagel Electric Company of Toledo when announcement was made that the company will equip all Chevrolet cars with the dashboard instrument gauge it makes. The Nagel company was purchased recently by the Safe-T-Stat Company of Brooklyn.

An addition is being built on the Hamilton Street plant of the Nagel firm at present to allow for increased output.

The Chevrolet company, which has a large plant here, is rapidly increasing in volume of production for its new six and is near capacity output now, with day and night shifts. The company is constructing a two-story addition to its present office building, which will cost $30,000 and will be completed by January 1. Other changes and additions are to be made to allow for expansion of facilities for handling the larger production schedules of the company, George D. Moore, vice-president of the company and general manager of the Toledo factory, said.

Fred Haynes May Head Durant Plant

Detroit, Nov. 22.—A report was current here today that when Durant Motors headquarters are established in Lansing, Mich., next January 1, Fred J. Haynes, formerly president of Dodge Brothers, will become executive head of the Durant operations at the new Lansing plant.

(The above report could not be confirmed yesterday at the Durant executive offices in New York).

DURANT SALES 105,851 IN FIRST TEN MONTHS

Elizabeth, N. J., Nov. 22.—Cars produced and sold by Durant Motors in the first ten months of 1928 were 105,851, or 30.8 per cent. more than were sold by the company in the entire twelve months of 1927, according to T. S. Johnston, assistant to W. C. Durant.

In October alone Durant plants produced and sold 42.5 per cent. more cars than in any previous October in the history of the company.

THIS issue of Automotive Daily News is being distributed at the production meeting of the Sociey of Automotive Engineers being held in Detroit today.

C. L. Barnes Heads Houdaille Corp. in Reorganization Plan

New York, Nov. 22. — The Houdaille Corporation, manufacturer of Houdaille hydraulic double-acting shock absorber, has been organized under the laws of the state of Michigan to acquire the capital stock, or all the assets and business including good will, of the Houde Engineering Corporation of Buffalo.

Claire L. Barnes will be president of the Houdaille Corporation. Mr. Barnes is likewise president of the Oakes Products Corporation and the Hershey Corporation, manufacturer of the Hershey Lock, which with one operation locks the steering wheel and ignition on automobiles.

Present operations of the Houdaille Corporation are being carried on at a high rate. Net earnings of the corporation for the nine months ended September 30, 1928, after all charges, including Federal taxes, which is the first nine months of the company's operation on a quantity production, were

(Continued on page 7)

Waukesha Motor To Boost Output 80% by Additions

Waukesha, Wis., Nov. 22.—With two new buildings about complete, which, with machinery and equipment will cost $1,000,000, the Waukesha Motor Company will have facilities to increase production about 80 per cent. next year. The company is embarking on an expansion program with the development of two new high-powered engines.

A year ago the concern's production was about 38,000 motors and profit about $1,200,000. This year around 75,000 motors will be built, and indications are that profit will approximate $2,000,000, with only 100,000 shares of no par common stock outstanding.

The two new buildings are each 307 by 176 feet, two stories high, with space for power cranes and conveyors.

One-third of this space goes into motor production, one entire floor being allotted to the building of the big motors, now through the testing period. In addition, the company will have an enlarged engineering and research office, designing rooms, with chemical, physical and metallurgical laboratories and service department.

NEW JERSEY TRUCK CLUB HAS 1929 LICENSE BLANKS

Newark, N. J., Nov. 22.—The Motor Truck Club of New Jersey, through its secretary, Alfred D. Way, is prepared to supply its members with car, truck and drivers' license application blanks for 1929, and is urging club members to make their applications early, in co-operation with the state Motor Vehicle Department.

TELLS JOBBERS HOW TO COMBAT CHAIN STORES

Atlantic City, N. J., Nov. 22.—Addressing the conference of the Middle Atlantic Automotive Jobbers at the Chalfonte Hotel yesterday, H. I. McConnell of Philadelphia advocated the sale of automobile accessories at gasoline stations. He said the practice had gained a strong foothold on the Pacific Coast and in the Middle West and predicted its development in the East. By this means the jobbers plan to combat the competition of chain stores and mail order houses. The jobbers are contemplating the sale of airplane parts and accessories.

TWO BUILDINGS TO HOUSE AERONAUTICAL EXPOSITION

Chicago, Nov. 22.—The Coliseum and First Regiment Armory will house the international aeronautical exposition to be held here December 1 to 9. In ground floor area more space will be utilized by the aircraft exhibit than by the automobile show, which takes place here in January. Three years ago the national automobile show found the Coliseum and the Greer Building adjoining sufficient to accommodate all exhibitors.

TAXICAB INSURANCE RATE NOT REDUCED IN N. Y.

New York, Nov. 22.—Denial that the sanction of the Insurance Department was given to a proposed reduction in the rates of taxicab insurance for 1929 from $30 to $27 a month was made yesterday by James A. Beha, superintendent of insurance. Mr Beha said the Northeastern Surety Company had advertised in a weekly newspaper for the taxicab fraternity that it had filed this rate with the sanction of the department and approval of the superintendent.

G. M. Export Group Will Meet in May At Buckwood Inn

New York, Nov. 22—The managing directors' conference of the General Motors Export Company, scheduled for May, 1929, as announced in the Automotive Daily News of October 3, will be held at Buckwood Inn, Shawnee-on-Delaware, Pa.

This was announced today by J. D. Mooney, vice-president of the General Motors Corporation, in charge of overseas operations, and president of the General Motors Export Company.

Every managing director from every overseas operation will attend. The General Motors Export Division does business in 104 countries, employs about 20,000 men and women of many nationalities, operates in many languages and does a gross business in a single year of more than $260,000,000.

The export division is so organized that there is a second man in training for each job, so that a change in personnel will not mean interruption of work. Each managing director is surrounded with an executive staff, including at least one assistant managing director.

AUBURN PLACES ORDER FOR 7,000 AUTOMOBILE BODIES

Auburn, Ind., Nov. 22.—The Auburn Automobile Company has placed orders with Central Manufacturing Company, body builders of Connersville, Indiana, for 7,000 bodies to be delivered within the next four months.

SPARKS from DETROIT

"Jimmy" to His Friends

* * *

Eldridge Has the "Dope"

* * *

Used to Be a Prof.

* * *

"Old Pacific"

Walter Boynton—Detroit Editor

REMOVAL of the Marmon-Detroit Company to the new quarters in the Cass Avenue Row is under way. The new building, affording a permanent home, cost $350,000 and will be under the charge of A. M. Colville, vice-president and general manager of the Detroit factory branch.

* * *

For a young man, Carl Henry Becker, an old Detroiter, is something of a veteran in the automotive industry. Just now, he is vice-president of Goldsmith-Becker Company, Inc., new Graham-Paige distributor for Georgia, with handsome headquarters in Atlanta. His friends call him Jimmy, for some unknown reason. While he was still a resident of Detroit, he was connected in various executive capacities with Lozier, Chalmers, Hudson-Essex and Saxon. In the latter company he was unusually active until it went out of business. The company with which he is now connected has for several years been known as one of the most energetic firms of merchandisers in the South.

* * *

SPEAKING of names that are not acquired at the baptismal font, there is Dope Eldridge. It is by this title that Clarence E. Eldridge, general sales manager for Reo, is best known. It has nothing to do with the ordinary meaning of the word, but it was fastened on Mr. Eldridge because of his extraordinary capacity for remembering statistics covering baseball and football. In his salad days, he was a newspaper correspondent at Ann Arbor, where he found plenty of athletic material to write about. For about twenty-two years he has acted as an official in games of intercollegiate football and has been named by the D. A. O. News as "one of the most generous contributors to the upbuilding of American football." His services as an absolutely impartial official, whose work has been praised even by the coaches of defeated teams, are noted in the same story, which says further of him that he is "as nearly fearless morally and physically as any one that ever stepped on the turf of a stadium."

Before he got into the football game, Mr. Eldridge was a baseball umpire, starting as an amateur and winding up as a professional arbiter. His present job at Lansing keeps him busy on automotive matters, but he somehow manages to revisit the gridirons several times every season, where he is just as keenly interested a spectator as ever.

WILLIAM F. RASCHE, who directs the personnel department of the General Motors Truck Company at Pontiac, used to be a member of the University of Pittsburgh, where he held the chair of vocational education. In the new connection, he continues the educational effort. The employment office has been outfitted with auditorium chairs and every morning at 9 the employees who are to start work the next day are given instruction in the principles of good workmanship and the policies of the company.

Mr. Rasche's department has widely diversified work. Negotiations are under way with the Pontiac Board of Education, working out a plan under which the younger employees may spend one day a week at the Central High School, taking up mathematics, drawing, science and allied subjects connected with their work in the factory. Foremen's classes are held weekly and there are ten students from the General Motors Institute of Technology who spend half of their time in the truck company's plant.

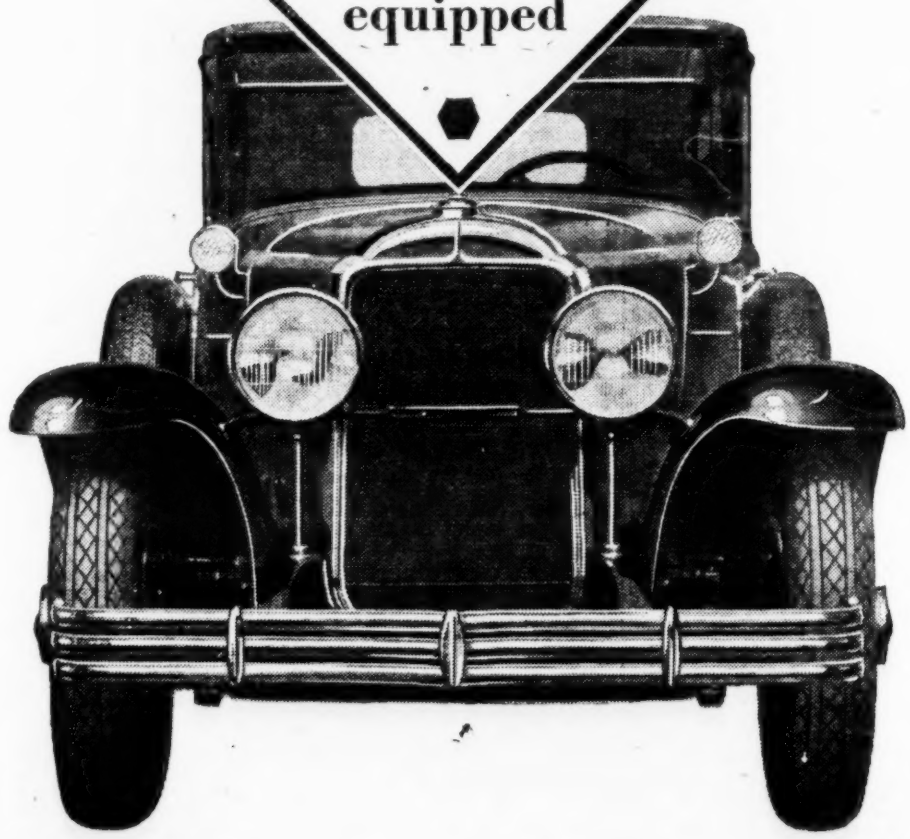
* * *

Tom Fetch must have got a great thrill from sitting again behind the wheel of "Old Pacific," the Packard car in which he made the trip from San Francisco to New York, twenty-ty-five years ago. The occasion was the opening of a new bridge on the New York-to-Chicago highway at Ashtabula, O. Tom led the parade of cars. "Old Pacific" being given the place of honor. The old car and its driver had passed through Ashtabula in 1903, on a transcontinental trip that required sixty-one days and was a hard job over every mile covered. Some days, a mile an hour was pretty good travel. Through the desert country, the car had to move over a canvas strip, to get any traction on the sand; the strip was carried forward after the car had passed, and the process was repeated until the desert was left behind. On one occasion Fetch got a cowboy to let him use an extra lariat for tire chains. The rope was cut into lengths and wrapped around the tires.

"Old Pacific" still has the one-cylinder engine that carried her across the country. And just to show that there is plenty of life in that power plant now, the man who was driving it down in Florida two years ago was arrested for speeding at forty miles an hour.

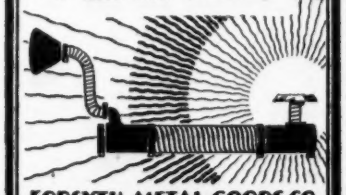
HARRISON RADIATORS

The Silver Anniversary Buick is Harrison-equipped



AURORA AUTO FURNACES

The steadily growing popularity of this new line of auto heaters, among both the trade and the users, has proven conclusively that our radically different ideas were right. Ask us for literature describing this profitable new accessory.



FORSYTH METAL GOODS CO.
EAST AURORA N.Y.

Chicago Automobile Trade Ass'n Makes Survey of Sales

100 New Car Sales Involve 98 Used Cars in Exchange

By WALTER BIRMINGHAM

CHICAGO, Nov. 22.—Analysis of a survey just concluded by the Chicago Automobile Trade Association for the National Association of Finance Companies shows that in ten months Cook county dealers took in exchange approximately 98 used cars for every 100 new cars sold.

The period covered was from January 1 to October 31, 1928, inclusive. The trade-in figures include the trade-ins on both new and used cars. This is an increase of nearly 6 per cent. over the same figures of last year.

Thousands and thousands of transactions were reported by the new car dealers in the county who answered the questionnaires sent out by the trade body. The reports gave an excellent cross-section of conditions in the county.

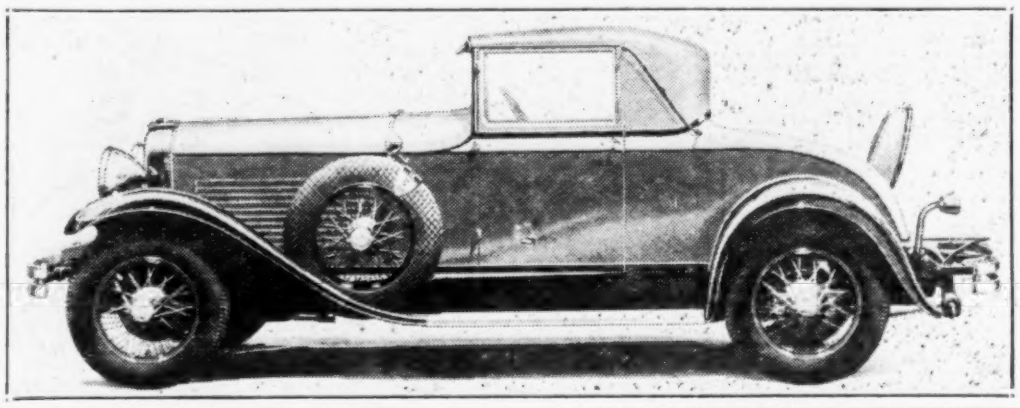
An interesting revelation was the fact that of every 100 new cars sold, 62 were purchased on deferred payments, a slight increase over 1927, and for every 100 used cars sold, 50 used cars were sold on time payments. This is a decrease of more than 6 per cent. from the 1927 figures.

On every 100 new cars sold, 67 used cars were trade-ins, and 32 used cars were traded in on each 100 used cars sold. Both these figures are approximately the same as a year ago.

Used car trade-ins exceeded used car sales by less than 1 per cent. **It was shown that for every 100 used cars traded in, approximately 7 per cent. were junked.** This is a slight increase over the statistics shown last year when approximately 6.8 per cent. were junked.

The survey showed that in the commercial car field dealers sold approximately 54 used trucks for every 100 new trucks sold, while 59 used trucks were taken in trade for every 100 new cars sold.

MARMON COLLAPSIBLE COUPE—Adding collapsible coupes to both the new series 68 and 78 lines the Marmon Motor Car Company now has available six 78 and six 68 body styles. The new series 68, on a standard wheel base of 114 inches, lists at $1,565, and the new series 78 collapsible, shown below, on a wheel base of 120 inches, is priced at $2,065 f. o. b. factory.



Franklin Company at Boston Offers Show Trip as Contest Prize

Boston, Nov. 22.—The Franklin Motor Car Company of Boston is i nthe midst of an interesting sales contest which will continue to the end of the current year.

The force of fourteen retail salesmen is divided into two teams, each of which chose a captain, Joseph McGuinness and Howard S. Power. These two have been in the company's employ for more than ten years. Each man and each team is given as a quota his last year's gross business, plus a 25 per cent. increase. Each salesman who makes his individual quota gets a free trip to the New York Automobile Show.

There is also a team prize of $25 per man for each month, and at the end of the contest there will be a dinner for all hands. The winners, sitting on one side of the table, will have a full course turkey dinner, and the losers, on the other side, will have bean soup. Harry C. Mayo, sales manager, is judge in the contest.

REPUBLIC TRUCK HEAD FINDS BUSINESS GOOD

Los Angeles, Nov. 22.—Business conditions throughout the entire middle and western parts of the country are excellent, according to O. W. Hayes, president of the Republic Motor Truck Company, Alma, Mich., who was in this city recently.

Mr. Hayes also made the unusual comment that Los Angeles is rapidly becoming a style center for the motor truck. He said that in many instances styles in trucks, equipment and methods are set here and adopted in the East some six months later. He attributes this to the wide variety of operating conditions, the all-year climate, long distances and wonderful system of roads.

CONVERSE TRUCK CO. GETS FEDERAL FRANCHISE

Springfield, Mass., Nov. 22.—The Converse Federal Truck Company has taken the franchise for the Federal truck for this territory. The new organization is headed by Standish S. Converse as president and treasurer. W. Neale Rathbun is general manager in charge of sales and George Meeladew is in charge of the service department. Both sales and service departments are located at 276 Chestnut St.

ANDERSON MOTORS, INC., OPENS IN ATLANTA, GA.

Atlanta, Ga., Nov. 22.—Anderson Motors, Inc., which comes from Pensacola, where it has maintained headquarters for the past twenty years under the leadership of J. B. Anderson, president, has opened for business in the remodeled Lullawater Building on West Peachtree Street. Hudson-Essex cars are being handled.

The company also has charge of one of the largest parts depots in the country under direct factory supervision, the stock valuation approximating $100,000. Hundreds of visitors attended the opening display of new Hudson and Essex cars. Associated with Mr. Anderson are B. I. Anderson as general manager, Harry I. Burns as sales manager, and Curtis Wood as office manager.

AMERICAN CARS POPULAR ABROAD

Wiley of Auburn Says Economic Outlook Encouraging

Auburn, Ind., Nov. 22.—The general economic and political situation in various countries of Europe show a decided improvement over this same period last year, according to R. S. Wiley, export manager of Auburn. Wiley has just returned from a visit to various European capitals, and from attendance at the Paris, Berlin and London automobile salons.

R. S. Wiley

Business men of Europe are much more confident than a year ago, according to Wiley, and trade is much less affected by political maneuvering, which also is decreasing. Public confidence in government has increased to a marked degree, he observes.

An outstanding fact is that working people are being paid high wages, and prosperity is evident on all sides. With exception of two countries, according to Wiley, unemployment is reduced to a minimum.

Public acceptance of American cars is an accepted fact, the Auburn official says, and European manufacturers are being influenced decidedly by American design.

Auburn business looks especially promising, according to Wiley, the company having distributors in every European nation, with a decided increase in sales over 1927 noted.

Auburn cars were on display at Paris and London salons. Following these salons special exhibitions were placed at Berlin, Brussels and Amsterdam.

Dealer Meetings Held in Many Cities

N. Y. DISTRICT SERVICE GROUP HOLDS SESSION

New York, Nov. 22.—More than 146 service men and service managers from the New York district dealers recently attended a service convention of the Oakland Motor Car Company at the Hotel Manger. This meeting was conducted by R. S. Svevad, service representative of the Oakland Motor Car Company. L. C. Covell, Douglas Andrews, B. M. Morris and C. E. Glazat represented the New York district.

SALES MANAGERS HEAR NEW PROBLEM DISCUSSED

Buffalo, N. Y., Nov. 22.—Members of the sales managers' branch of the Buffalo Auto Dealers' Association at a dinner meeting in the Hotel Statler heard an address by Ward Williams of the Edward H. Baker Corporation. Mr. Williams declared that the condition of the automobile salesman is worse than it was five years ago because of the shrinkage in values of new cars. The only way to offset this shrinkage is by greater number of sales, he said.

CHEVROLET SALES SCHOOL HELD IN MASON CITY, IA.

Mason City, Ia., Nov. 22.—One hundred Chevrolet dealers, bookkeepers and a number of bankers from the fifteen counties comprising the north central and northeastern Iowa district, attended the school of business management conducted in the Hotel Hanford recently. J. E. Johnston, Des Moines, zone accounting manager; D. E. Glenn, Des Moines assistant sales manager, and George Geoffrey, Des Moines, zone manager for the General Motors Acceptance Corporation, were in charge of the school.

GAYLORD FORD ADDRESSES MARIETTA ASSOCIATION

Marietta, Nov. 22 (U. T. P. S.).—At a meeting of the Marietta Automobile Dealers' Association, held November 15, Gaylord H. Ford, acting manager of the Ohio Council of the National Automobile Dealers' Association, addressed the meeting on accounting and the used car problem. The association voted to affiliate with the Ohio council and the national association.

SALES CONFERENCE IN WATERLOO DRAWS MANY

Waterloo, Ia., Nov. 22.—P. K. Norman, Omaha, factory representative for the Durant cars, was leader in the sales conference conducted in the Dunlap Motor Company Building, 5th and Jefferson Streets, last week, attended by Durant dealers from twenty-six northeastern Iowa counties. H. B. Dunlap, president of the distributing branch, presided.

H. D. BULLOCK ADDRESSES FOND DU LAC ASSOCIATION

Fond du Lac, Wis., Nov. 22.—H. D. Bullock, Chicago, sales analyst of the National Automobile Dealers' Association, addressed sixty members of the Fond du Lac Automobile Dealers' Association on merchandising methods at a meeting on November 16. "Knowledge of the business is going to be a big requisite to remaining in business during 1929," he declared.

CHEVROLET SALESMEN OF BOSTON ENTERTAIN

Boston, Nov. 22.—More than 350 Chevrolet retail salesmen were guests of the Chevrolet Dealers' Association, combined with the Chevrolet dealers surrounding Boston, at a grand fiesta the evening of November 17. A banquet and entertainment was provided in appreciation of the tremendous volume of sales rolled up during the past year.

for Economical Transportation

CHEVROLET

Chevrolet dealers have delivered more than 1,000,000 new cars into the hands of owners since January 1st — making today's Chevrolet, by a tremendous margin, first choice of the nation for 1928—and bringing to Chevrolet dealers everywhere record breaking success.

CHEVROLET MOTOR COMPANY, DETROIT, MICHIGAN
Division of General Motors Corporation

QUALITY AT LOW COST

Bigger and Better

Automotive Daily News

"Of, By and For the Entire Automotive Industry"

Published Every Day Except Saturday and Sunday by
AUTOMOTIVE DAILY NEWS PUBLISHING CORPORATION,
350 Hudson St., New York, N. Y.

Circulation—Net paid average 10,000 daily guaranteed. Member A. B. C.

Entered as second-class matter August 27, 1925, at the post office at New York, N. Y., under the Act of March 3, 1879.

O. J. Elder, President; George M. Slocum, Vice-President; Alexander Johnston, Secretary.

FRIDAY, NOVEMBER 23, 1928

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Mail subscriptions to CIRCULATION DEPARTMENT—1926 Broadway, New York, N. Y. Charles H. Wilson, Manager. **Telephone TRAfalgar 4500**
Subscription Rates—One year, $12.00; two years, $20.00, for United States and Canada. To Foreign Countries—One year, $15.00; two years, $25.00. Single copies, 10 cents.

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The Used Car a Blessing

SPEAKING TO A GROUP of newspaper men in Detroit last week, R. H. Grant, vice-president in charge of sales for the Chevrolet Motor Company, made the remark: "So far from the used car being a problem, it is the greatest blessing the automobile industry has."

Dealers who have struggled to get rid of an overstock of used cars may, at first glance, be inclined to groan a negative to the statement. However, Mr. Grant's argument in the final analysis leaves little room from any such pessimistic point of view. It is because of the fads, fancies and styles, which cause motor cars to be retired from the original owners' service before they are worn out, that we are able to dispose of the tremendous number of new cars that are built and sold every year.

In other words, it is because the used car exists as salable merchandise that we get the rapid turnover, which makes the automobile business the success it is today. If every car owner kept his vehicle until the last drop of service had been milked out of it, the market in this country would not be one-half of the four or five million cars that we annually buy. By selling his car, in which unused transportation still exists, to some one who must perforce or by choice buy his transportation in that way, the original car owner becomes a new car buyer long before he would if he decided to use all the transportation that was built into the vehicle.

Mr. Grant cited the fact that it is because our product has mobility, because it runs about on wheels, that we have this yearly turnover. He compared the motor car with a bed and suggested that if the latter had wheels and a propulsive power, bed owners would probably chug down to furniture stores once a year or so and turn in their old beds for new ones. But the bed, being a static thing, it is used just about as long as it will serve its obvious purpose. The result is that the bed market lacks the tremendous replacement factor that the automotive market has.

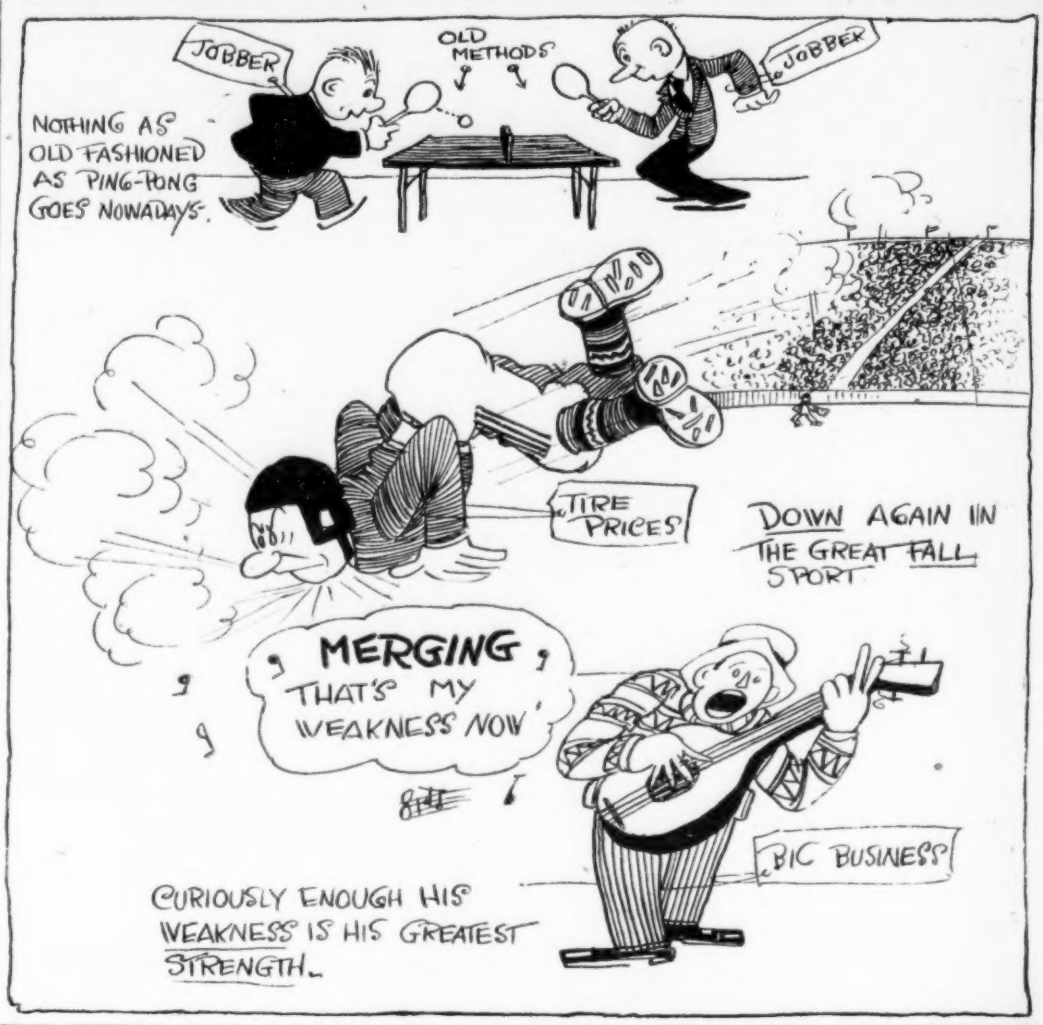
It will be well for dealers to realize that the used car, as the principal factor in giving us our remarkable turnover of products, is entitled to their gratitude, not to their anathemas. If the merchandising of used cars is wrong, is it too much to say that the fault lies with the merchandiser and not with the merchandise?

Manufacturing at the Market

IN A RECENT ADDRESS, E. W. McCullough, manager of the Department of Manufacture of the United States Chamber of Commerce, remarked that, "The day of the big inflexible plant, facing intense competition in distribution as well as production, seems to be passing. The cry that the big fish are eating up the little ones sounds less alarming. Already many of our newer and best managed industries are getting away from building very large units and are leaning more strongly toward those commensurate with the market to be supplied and building them near it."

It is interesting to note that the automotive industry was one of the first of the big business units to envision this idea of moving manufacture to markets. Ford, Chevrolet, Durant, Willys-Overland and other big production organizations years ago began this system of diffusion of manufacturing to place production at the threshold, so to speak, of the markets to be supplied.

Here and There in the Trade Headlines— By MacConachie



CALENDAR OF COMING EVENTS

NOVEMBER

15-25—**Paris, France.** Truck and bus salon.
22-23—**Detroit, Mich.** Society of Automotive Engineers, production meeting.
29-Dec. 9—**Buenos Aires, Argentina.** Auto show.

DECEMBER

1- 9—**Chicago, Ill.** Aeronautical Exposition at Coliseum.
1-10—**Montevideo, Uruguay.** 6th annual motor show.
2- 8—**New York city.** Automobile Salon at Hotel Commodore.
3- 7—**New York city.** American Society of Mechanical Engineers' annual meeting.
4- 6—**Chicago, Ill.** American Petroleum Institute ninth annual meeting at Stevens Hotel.
—**Seattle, Wash.** Automotive Maintenance Association, annual banquet.
6- 7—**Chicago.** Society of Automotive Engineers' Aeronautic Meeting.
8- 9—**Fort Worth, Tex.** National Gasoline Association, annual convention.
8-19—**Brussels, Belgium.** Automobile and motorcycle show.
10-12—**New York City.** National Highway Traffic Association annual meeting.
10-15—**New Orleans, La.** Seventh Annual Asphalt Paving Congress.
12-14—**Washington, D. C.** International Air Conference.
13-14—**Washington, D. C.** National Research Council

JANUARY

7-12—**Camden, N. J.** Automobile Show
8-12—**Philadelphia.** American Welding Society, meeting, Bellevue-Stratford Hotel.
10—**New York city.** Society of Engineres, annual dinner at Hotel Waldorf-Astoria.
5-12—**New York city.** N. A. C. C. Show
11-20—**Amsterdam, Holland.** Automobile show.
12-19—**Buffalo, N. Y.** Automobile show.
12-19—**Newark, N. J.** Automobile show.
12-19—**Philadelphia, Pa.** Automobile show.
12-19—**Milwaukee, Wis.** Automobile show.
13-19—**Cincinnati, O.** Automobile show.
14-18—**Los Angeles, Cal.** American Society for Steel Treating, semi-annual meeting.
14-18—**Los Angeles, Cal.** Western States Metal and Machinery Exposition.
14-19—**Atlanta, Ga.** Automobile show.
14-19—**Cleveland, O.** American Roadbuilders' Association, Inc., Convention and Show.
15—**Cleveland, O.** Equipment for Motor Trucks, Inc., members and visitors meeting.
15-18—**Detroit, Mich.** Society of Automotive Engineers, annual meeting.
18-26—**Columbus, O.** Automobile show.
19-21—**Montreal, Canada.** National Motor Show of Eastern Canada.
19-26—**Albany, N. Y.** Automobile Dealers Association, automobile show.
19-26—**Pittsburgh, Pa.** Automobile Dealers' Association, passenger car, accessory and shop equipment show.
19-26—**Detroit, Mich.** Detroit Automobile Dealers' Association Show at Convention Hall.
19-26—**Baltimore, Md.** Automobile Show, 5th Regiment Armory.
19-26—**Louisville, Ky.** Automobile show at Armory.
21-26—**Wilmington, Del.** Automobile show.
21-26—**Rochester, N. Y.,** Automobile show.
23—**Detroit, Mich.** Auto Trade Association, Ninth Annual Convention at Book Cadillac Hotel.
23-Feb. 6—**Cairo, Egypt.** 2d international automobile show.
24-25—**Greensboro, N. C.** North Carolina Automotive Trade Association, annual convention.
26-Feb. 2—**Chicago.** Automobile Salon at Drake Hotel.
26-Feb. 2—**Chicago.** N. A. C. C. Show.
26-Feb. 2—**Cleveland, O.** Automobile show.
26-Feb. 2—**Washington, D. C.** Automobile Show.
26-Feb. 4—**San Francisco, Cal.** Automobile show.
28-29—**Chicago, Ill.** National Automobile Dealers Association convention at Palmer House.
28-Feb. 2—**Elmira, N. Y.** Automobile Merchants' Association, annual show.
30-Feb. 16—**Rome, Italy.** International Salon.

FEBRUARY

2- 9—**Harrisburg, Pa.** Nineteenth Annual Automobile Show.
2-10—**Seattle, Wash.** Automobile show.
4- 9—**Ottawa, Canada.** Motor Show at Coliseum.
4- 9—**Syracuse, N. Y.** Automobile Show.
4- 9—**St. Louis, Mo.** Automobile Show.
4- 9—**Grand Rapids, Mich.** Automobile Show.
5- 9—**Peoria, Ill.** Automobile Show.
9-16—**Kansas City, Mo.** Automobile Show at American Royal Building.
9-16—**Los Angeles, Cal.** Automobile Salon at Hotel Biltmore.
11-16—**Denver, Colo.** Automobile Show at Auditorium.
13-16—**Mankato, Minn.** Automobile Show.
13-18—**Denver, Col.** Automobile show.
16-23—**Hartford, Conn.** Automobile Show.
18-23—**Des Moines, Ia.** Automobile Show.
22-March 3—**Copenhagen, Denmark.** Automobile Exhibition of passenger cars.
21-23—**Holyoke, Mass.** Automobile Show.
23-Mar. 2—**San Francisco, Cal.** Automobile Salon at Palace Hotel.
25-Mar. 2—**Indianapolis, Ind.** Automobile Trade Association Annual Automobile Show.
25-Mar. 2—**Springfield, Mass.** Automobile Show.

MARCH

2- 9—**Boston, Mass.** Automobile Show.
2-10—**Los Angeles, Cal.** Sixteenth Annual Automobile Show.
5-16—**Springfield, Ill.** Automobile Dealers' Association, Eleventh Annual Automobile Show.
9-17—**Copenhagen, Denmark.** Trucks, Motorcycles, etc., shows, at Forum.
15-24—**Geneva, Switzerland.** Automobile show.

APRIL

1-Dec.—**Barcelona, Spain.** Exposition of passenger cars and trucks.

CLASSIFIED ADVERTISEMENTS IN THE AUTOMOTIVE DAILY NEWS BRINGS RESULTS

A going automobile passenger car manufacturing plant, equipment and good will, can be purchased outright at a great sacrifice by someone who sees the opportunity. This proposition will bear the closest scrutiny and all inquiries will be treated in the strictest confidence by the undersigned.

Write or Wire

Automobile Manufacturing Opportunity

Care Box "F"
2-144 General Motors Building,
Detroit, Michigan

Production in Accessory, Parts Plants Unusually High in Jersey

NEWARK, N. J., Nov. 22.—Production in automotive plants in this state is continuing this year at a high rate during a season that has heretofore resulted in layoffs and curtailment of output. Manufacturers of accessories, parts and shop equipment report capacity operation, new lines and additional machinery to care for the increases in orders.

The employment situation in New Jersey is exceptionally high in all automotive lines, with a shortage of skilled workers noted in many factory centers. There has been no decrease in the wage level, it is said, even in the textile centers, where fabrics for tires and automobile tops are being made.

Estimates are that 35 per cent. more persons were employed in automotive industries in the state on November 1 than at the corresponding time in 1927.

E. E. Warfield, manager of the automotive replacement division of the Manhattan Rubber Company, Passaic, reports that in the first ten months of this year production and sales showed an increase over the same period in 1927 with the plant operating at capacity. Manager Warfield says that new product to be marketed will include air hose, car washer hose, radiator hose, fan belts, welding hose and molded brake lining. The company is adding new machinery to take care of the manufacture of the added products.

The Motorcraft Corporation of Newark, according to A. A. Nichols, secretary, is operating at about 75 per cent. capacity with expectations of starting full time operations the first of the year. Business so far this year is 5 per cent. ahead of the first ten months in 1927, Mr. Nichols says.

The Pocono Rubber Cloth Company, Trenton, has added more vulcanizing capacity and machinery for this operation has been installed, according to plant officials. The company reports a better sales and production volume so far this year with an excellent outlook for the balance of the year. The Trenton plant is operating at capacity.

The Weston Electric Instrument Corporation, Newark, reports for the nine months ended September 30, net profit of $380,430, after depreciation, Federal taxes, etc., equivalent under the participating provisions of the shares to $2.19 a share earned on 75,000 no par shares of Class A stock and $1.44 a share on 150,000 shares of no par common stock. This compares with a net profit of $349,778 in the first nine months of 1927.

The procurement of a large contract from the Ford Motor Company for shock absorbers under Houde patents has delayed the removal of the Spicer Manufacturing Company from South Plainfield to Toledo. A new factory has been erected at Toledo, and the company expected to move several months ago. The present output is 4,500 shock absorbers a day.

A. H. Mustard, sales manager of the General Lead Batteries Company, Newark, reports sales and production this year as "fair," with the outlook for the winter as good.

The Pyrene Manufacturing Company, Newark, reports good response from its consolidation of sizes for tire chains. The company announces that eleven sizes of Pyrene tire chains take care of all tire sizes.

The Okonite Company, Passaic, is busy on Okolite ignition wire, Okocord and Oconite tapes are also going big, it is announced at the factory.

Joseph Dixon Crucible Company, Jersey City, has had an excellent response for No. 677 for cold weather lubrication.

P. S. FORD AGAIN CHOSEN HEAD OF INDEPENDENT OIL MEN OF VIRGINIA

Richmond, Va., Nov. 22 (U. T. P. S.).—An address by James A. Gilmore of Chicago, member of the American Oil Men's Association, on the topic of marketing ethics of petroleum products, concluded the autumn meeting of the Independent Oil Men's Association at Lynchburg.

P. S. Ford of Martinsville was reelected president, with M. B. Whiting of Clifton Forge, as vice-president, and Harry Sherby of Washington as second vice-president. Several new members of the board were selected.

It was brought out by the speaker that in view of the poor distribution system within the state, oil men should organize so that they would be in a more advantageous position to present their problems to state legislative bodies for solution, and to urge adoption of laws that will remove what he claimed to be hardships now imposed on both the consumer and retailer.

Charlotte, N. C., Nov. 22.—The Dayton Rubber Manufacturing Company, Dayton, O., has established a factory warehouse here to serve as distribution center for the Carolinas and bordering states. A four-story warehouse at 211 West 1st St. has been leased.

RECENT N. S. P. A. SHOW EXHIBITORS REPORT BIG VOLUME OF BUSINESS

Detroit, Nov. 22.—Voluntary reports of exhibitors at the recent N. S. P. A. show in Cleveland brought forth the information that the volume of business transacted during the week very greatly exceeded that done at any previous N. S. P. A. show, according to E. P. Chalfant, executive vice-president.

"In every respect it was a business show," said Chalfant. "In appearance of exhibits it exceeded my expectations of attractive representation of products, this being due to the large space taken by exhibitors, on the average, as well as to the care and thoroughness of preparation in making their exhibits representative of their products."

An outstanding feature of the show was the model parts store and shop, planned and supervised by Tom Duggan, merchandising service director. The store and shop showed what can be accomplished with a limited amount of space and still display merchandise attractively.

Missouri Boosters Elect Carson Chiles

Kansas City, Nov. 22.—Automotive Booster Club, Missouri Valley No. 2, has elected the following officers for the coming year:—

President, Carson W. Chiles, manufacturers' representative; vice-president, Joseph Sabourin of the Wedler-Shuford Company; secretary, Charles H. Koslowsky, manufacturers' representative; treasurer, Frank W. Broadhurst; office manager, French Battery Company; assistant secretary, C. E. Stevenson, manufacturers' representative.

Mr. Broadhurst also will serve as editor of the organization's publication.

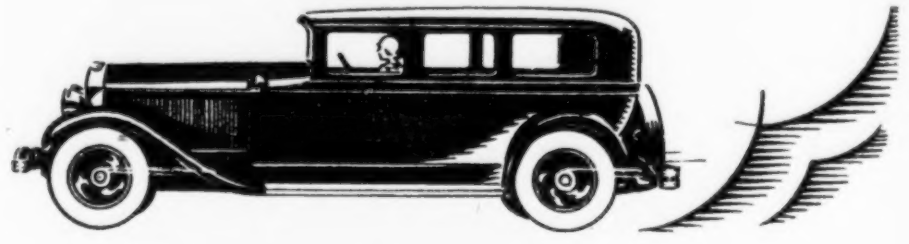
ROSS GEAR PROFIT IN TEN MONTHS $715,539

New York, Nov. 22.—Net profit of the Ross Gear and Tool Company for the ten months ended October 31 was $715,539 after charges and Federal taxes, equivalent after dividend requirements on 6 per cent. preferred stock to $4.77 a share on 150,000 no-par shares of common stock.

DESAKHNOFFSKY JOINS HAYES; BODY DESIGNER

Special from A. D. N. Detroit Bureau

Detroit, Nov. 22.—Hayes Body Corporation announces the appointment of Alexis W. Desakhnoffsky, internationally known body designer, as art director. He held a similar position with Van Den Plas, during which time his creations successively won four first places in the "elegants" contests held at Monte Carlo. This year at the Bournemouth, England, "Elegants" show, the first to be held in Great Britain, Mr. Desakhnoffsky won the highest award offered, a gold cup. He has been responsible for some of the bodies on the highest priced European cars, notably the Rolls Royce, Hispano-Suiza, Minerva and Bentley. Mr. Desakhnoffsky has already taken up his new work at Grand Rapids.



A commanding car in America's finest market

Every feature of the Stearns-Knight bespeaks luxury, dignity, magnificence. The smooth, quiet, powerful performance—the polished grace and distinction of the Stearns-Knight have an immediate and intimate appeal to those who not only know the best—but are accustomed to demand it. Cultured, successful men of affairs own Stearns-Knights. To sell Stearns-Knight is automatically to gain pleasant contact with America's finest market.

STEARNS-KNIGHT SALES CORPORATION
CLEVELAND, OHIO

STEARNS-KNIGHT

The finest transportation of today

October Output, Passenger Cars, Totals 341,705

(Continued from Page 1)

ceived from 156 manufacturers in the United States, forty-seven making passenger cars and 123 making trucks. Figures for passenger cars include taxicabs, while those for trucks include ambulances, funeral cars, fire apparatus, street sweepers and buses.

United States:— 1927.	Total.	Pass. Cars.	Trucks.
January	238,908	199,650	39,258
February ...	304,735	264,171	40,564
March	394,513	346,031	48,482
April	406,382	358,682	47,700
May	405,648	358,725	46,923
June	323,817	280,620	43,197
July	269,396	237,811	31,585
August	309,994	275,585	34,409
September ..	260,310	226,443	33,867
October	219,682	183,042	36,640
T'l (10 mos.)	3,133,385	2,730,760	402,625
November ...	134,370	109,758	24,612
December ...	133,571	106,083	27,488
Total (year)	3,401,326	2,946,601	454,725
1928.			
January	231,728	205,646	26,082
February ...	323,796	291,151	32,645
March	413,327	371,821	41,506
April	410,104	364,877	45,227
May	425,783	375,863	49,920
June	396,796	356,622	40,174
July	392,676	338,792	53,284
August	461,254	400,593	60,705
September ..	415,283	358,872	56,411
October	398,418	341,705	57,113
T'l (10 mos.)	3,869,069	3,405,942	463,067

REEVES HEARS REPORTS OF MOTOR PROSPERITY

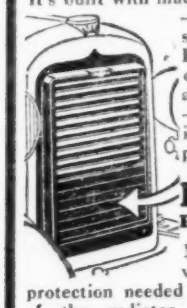
Detroit, Nov. 22. — Continued prosperity for the motor industry in 1929 is indicated by reports from different sections of the country, as well as from countries throughout the world, according to Alfred Reeves, general manager of the National Automobile Chamber of Commerce.

"With 23,000,000 vehicles running here," he said, "the replacement demand becomes an increased factor, especially as this year will see replacement of cars made in 1922 and 1923, the latter being the first year when the industry exceeded 4,000,000 vehicles."

Sell Moto-Gard
The Triple Service Shutter

it always works!

It's built with machined precision —leaves can't stick or fly open. Prove it to your customers with a demonstration —and put profits in your pocket!



EXTRA PROTECTION

Moto-Gard provides the *extra* protection needed at the bottom of the radiator, where water cools first and freezing starts.

Triple Service

Moto-Gard permits regulation of the water temperature necessary for efficient motor operation.

Visible Control

The nickeled thumb screw gives every degree of opening down to 1-32 of an inch, if desired. Shutter movement shown on the attractive indicator dash control. No effort to operate.

And Six Other Advantages

There is a Moto-Gard distributor near you. Write us; we will have him call on you and give you complete information.

The Brewer-Titchener Corp.
701 Port Watson St., Cortland, N. Y.

FIRESTONE CO. ACQUIRES LOCATIONS FOR STATIONS

Miami, Fla., Nov. 22.—The Firestone Tire and Rubber Company has acquired important locations in this city, Jacksonville, Tampa and West Palm Beach for the erection of substantial tire distribution and service stations where everything needed for a car except mechanical work on the engine will be provided.

The Jacksonville location will represent an investment of $250,000 and will be the southeastern service branch for Florida, South Carolina and a part of Georgia. Tampa headquarters also will be a warehouse proposition and the investment there will represent about $185,000. Expenditure at West Palm Beach will approximate $75,000. The Miami location will be the largest of the four, but no estimate of the investment to be made there is available.

C. & O. R. R. ORDERS SIX GAS-ELECTRIC RAIL CARS

Richmond, Va., Nov. 22.—The Chesapeake & Ohio Railway has awarded to the J. G. Brill Company an order for six gas-electric rail motor cars, to cost approximately $300,000.

RAYBESTOS NET PROFIT, 9 MONTHS, $911,202

New York, Nov. 22.—Raybestos Company reports for nine months ended September 30, 1928, net profit of $911,202 after depreciation, Federal taxes, etc., equivalent after 8 per cent. preferred dividends to $7.36 a share (par $25) earned on 118,572 shares of common stock. This compares with $710,385, or $5.41 a share on common, in first nine months of 1927, figured on same number of common shares.

For quarter ended September 30 net profit was $345,229 after above charges, equal to $2.80 a share on 118,572 shares of common, compared with $144,395, or $1.01 a share, in third quarter of previous year.

MONARCH TRACTORS TO ENLARGE ITS FACTORY

Springfield, Ill., Nov. 22.—Expenditure of three-quarters of a million dollars within the next three months to provide enlarged production facilities and quarters for Monarch Tractors Corporation to keep pace with production demands was announced yesterday by officials of Allis-Chalmers Manufacturing Company, Milwaukee, of which the local tractor plant is a subsidiary. Expansion is made possible by the purchase of 130 acres of land directly south of the present Monarch plan in Harvard Park.

AC SPARK PLUG CO. PROMOTES K. K. McGARVEY

Detroit, Nov. 22.—K. K. McGarvey, secretary of the engineering department of AC Spark Plug Company at Flint for the past three years, has been appointed to the AC equipment sales engineering staff, with headquarters in Detroit, as an assistant to Jack Gray, director of equipment sales, according to an announcement by B. W. de Guichard, president and general manager of the company.

Mr. McGarvey entered the industry fourteen years ago with Apperson Automobile Company, Kokomo. He served as technical adviser for Pilot Motor Car Company at Richmond, Ind., in 1920. In 1921 he became associated with Haynes Automobile Company as assistant chief engineer, from which place he came to AC.

B. M. SEYMOUR NOW WITH BRADFIELD MOTORS, INC.

Chicago, Nov. 22.—Following B. M. Seymour's resignation as manager of the New York branch of the General Motors Truck Company, where he had charge of taxicab and truck sales, comes the announcement that he has joined Bradfield Motors, Inc., of Chicago as sales manager.

Mr. Seymour is a veteran in the taxicab manufacturing field. He was associated with H. C. Bradfield when he was sales manager of the Yellow Cab Manufacturing Company and built up for the company a very large clientele among the cab operators of this country and Canada. Seymour is favorably known among taxicab operators. He starts his new work at once.

LAST OF THREE OPEN-HEARTH FURNACES INSTALLED BY OTIS

Cleveland, Nov. 22—The Otis Steel Company has put into operation the last of the three new open-hearth furnaces to be constructed this year. The sompany now has at its Riverside plant eight low-cost open-hearth furnaces with an annual capacity of 720,000 tons of steel ingots.

No company in a better record keeping dealers

THE steadfast and stay-put loyalty of Chandler's distributors and dealers is in striking contrast to all the flopping around from pillar to post you see among so many other dealers.

Any number of Chandler's distributors and dealers have been with Chandler from the very beginning—right straight through the entire fifteen years of Chandler history.

They stick because it pays them to stick . . . because they can make money and run their own business on an independent and pleasant basis.

They stick because Chandler is one company that doesn't cram sales quotas down a dealer's throat.

CHANDLER-CLEVELAND MOTORS CORPORATION

CHAN

N. A. F. C. Reaches 'Dealer Coercion' Issue Agreement

(Continued from Page 1)

Minneapolis, and O. Rey Rule of the Pacific Finance Corporation, Los Angeles. New directors elected were B. H. Trippe of the Maryland Credit-Finance Croporation, Easton, Pa.; T. E. Courtney of the Northern Illinois Finance Company, De Kalb, Ill., and William Frentz of the Security Finance Company, Louisville, Ky.

The board of directors re-elected E. M. Morris of South Bend, Ind., president of the association, and chose Mr. Rule as first vice-president, R. P. Babcock of Jamaica, vice-president of the Long Island Bankers, Inc., as second vice-president; C. E. Vesy of Omaha, Neb., third vice-president, and Victor L. Brown of Milwaukee, fourth vice-president. The board re-elected as treasurer W. G. Tennant, president of the Tennant Finance Corporation, Chicago, and as secretary and general manager C. C. Hanch of Chicago. It reappointed as analyst Milan V. Ayres of Chicago.

CRUDE OIL OUTPUT IN WEEK SHOWS DECREASE

New York, Nov. 22.—Domestic crude oil production averaged 2,490,850 barrels daily in the week ended November 17, a decrease of 6,150 barrels daily from the preceding week, according to the American Petroleum Institute. Production in the corresponding week of 1927 was 2,466,950 barrels daily, while the record output was 2,586,100 barrels daily in the week ended July 30, 1927.

Imports of petroleum for the week ended November 17 averaged 218,286 barrels daily, against 197,714 the week before. The total new supply was 2,709,136 barrels daily, comparing with 2,694,714 daily in the preceding week, and a record of 2,830,800 barrels daily in the week ended September 29.

STEEL LOADING TRUCK DEVELOPMENT COMPLETED

Cleveland, Nov. 22.—Development work has been completed by the Baker-Raulang Company on its truck for loading box cars with tenton packages of sheet steel, without breaking through car floors. This new truck is known as the Baker Type D-96 Articulated Tilting Truck.

Macauley Honored On 18th Anniversary

Special from A. D. N. Detroit Bureau

Detroit, Nov. 22.—Alvan Macauley, president of Packard, was guest of honor at a dinner last night in the Detroit Club to mark the eighteenth anniversary of his connection with the company.

Mr. Macauley was presented with a bronze plaque and a congratulatory message from the company's officials. Among the guests were: Alfred Reeves, manager of the National Automobile Chamber of Commerce, to the presidency of which Mr. Macauley was recently elected; Gov. Alvin T. Fuller of Massachusetts, New England Packard distributor; Lee J. Eastman, vice-president and New York branch manager; Ira L. Berk, Pittsburgh distributor, and Robert B. Parker, Philadelphia distributor.

Packard officials present included: Henry E. Bodman, vice-president and general counsel; E. F. Roberts, vice-president in charge of manufacturing; Col. J. G. Vincent, vice-president in charge of engineering; Burton C. Budd, export manager; R. E. Chamberlain, general sales manager; M. A. Cudlip, vice-president and secretary; Hugh J. Ferry, treasurer; James F. Marks, purchasing manager; F. H. McKinney, advertising manager; A. Moorhouse, chief engineer, and H. W. Peters, vice-president in charge of distribution.

HOOVER VICE-PRESIDENT OF THOMAS J. HAY, INC.

Chicago, Nov. 22.—Thomas J. Hay, president of Thomas J. Hay, Inc., Chandler distributor for Chicago and vicinity, announces the election of Fred H. Hoover as vice-president, in charge of sales. Mr. Hoover is a veteran in the automobile business, coming to the local Chicago distributor from Boston, Mass., where for several years past he has been vice-president and general manager of the Boston branch of the Chandler Motor Car Company.

FACTORY NEAR SYDNEY, AUSTRALIA, FOR SALE

Washington, Nov. 22. — A factory, formerly occupied by an automobile dealer and located six miles from the center of Sydney, Australia, is for sale. Any American manufacturer interested in acquiring such a site for an assembling plant may obtain blueprints and other data by communicating with the automotive division of the Department of Commerce.

Houdaille Corp. Organized Under Michigan Laws

(Continued from Page 1)

$944,935, equal to $8.74 a share on the Class A stock outstanding, and $5.01 a share on the Class B stock, after Class A dividends.

The class A convertible preference stock of the Houdaille Corporation is preferred as to commulative dividend at the rate of $2.50 per share per annum and is convertible into class B stock share for share. It is the intention of the directors to authorize the payment of dividends on the Class B stock at the annual rate of $1.50 per share.

The governors of the Chicago and Detroit stock exchanges yesterday admitted to listings and trading shares of the Houdaille Corporation. Trading in these shares began today.

Simultaneously with the listing of these shares, a banking group composed of Harris, Small & Co. of Detroit, and Paul H. Davis & Co. of Chicago, offered publicly 108,000 units of the Houdaille Corporation at $66 a unit, consisting of one share of Class A convertible preference no par stock at $41 per share and one share of Class B stock, no par value, at $25 per share. The offering was heavily over-subscribed.

Rubber Institutes For Communities Urged by F. C. Hood

(Continued from Page 1)

policy based on the service rendered is a very desirable business fundamental. Most of the economies gained in manufacturing have been wasted in distribution extravagances and foolish price-cutting for volume, and the science of cost accounting seems to be a lost art."

Other points made by Mr. Hood in his address were, in brief, as follows:—

"The annual production of pneumatic tires in 1913 was approximately 8,000,000; in 1917, 24,000,000; in 1922, 40,000,000; in 1927, 64,000,000.

"The average dealer list price in 1913 was approximately $29; in 1917, $23.20; in 1922, $19.20; in 1927, $13.50—and the consumer pays a mark-up on these prices.

"The average mileage in 1913 was 3,500 miles; in 1917, 5,000; in 1922, 8,000; in 1927, 12,000.

"The average cost per mile to car owner on consumer price basis in 1913 was about $.01; in 1917, .0056; in 1922, .0032; in 1927, .0017. Cost per mile was about one-seventh the cost in 1913. If today a tire will run 18,000 miles, cost per mile is only one-twelfth the cost in 1913.

"The gain in mileage developed the balloon tire, so that the collapse in 1921 has been repeated in 1927 and 1928; and the rubber price-fixing policy of England has also collapsed.

"In the eight years from January 1, 1920, to December 31, 1927, we estimate the tire industry should have paid as dividends something more than $200,000,000 above what it did pay, to give stockholders a reasonable return. Statistics would indicate the losses in capital total over $350,000,000, making more than a half-billion total contribution of tire stockholders to the consuming public."

Group meetings and discussions occupied most of the day. Dr. Samuel W. Stratton, president of the Massachusetts Institute of Technology, gave an address indicating modern industry's favorable attitude toward research and education's cognizance of this attitude. The final test of laboratory work, however, he said, often lies with the user of the product.

The feature of last night's entertainment program was a reproduction of the Boston tea party.

PRATT & WHITNEY BENEFITS BY FORD AIRCRAFT OUTPUT

New York, Nov. 22.—Ford Motor Company's recent decision to increase production of its tri-motored airplanes will have an important bearing on earnings of Pratt & Whitney Aircraft Company, subsidiary of Niles-Bement-Pond. Beginning in November, Pratt & Whitney will ship twenty-five of its 400 h. p. Wasp motors a month to the Ford factory, and this schedule will be maintained until facilities permit shipment in greater volume.

the industry has than Chandler for *happy* and *loyal*

They stick because Chandler is one company that doesn't order a dealer to do this, or do that, or do the other thing, with the understanding that off comes his head unless he swallows all objections and agrees to everything.

You have only to look around you to see how frequently dealers keep changing from line to line. Outside of Chandler's ranks, a dealer who has handled one line continuously for ten or more years is almost as rare a bird as the Great Auk.

The moral is: If you want to settle down to some good steady money-making, and enjoy doing business as you want to enjoy it, sign up with Chandler. And now's the time to do it—in the year of Chandler's greatest cars.

CLEVELAND, OHIO

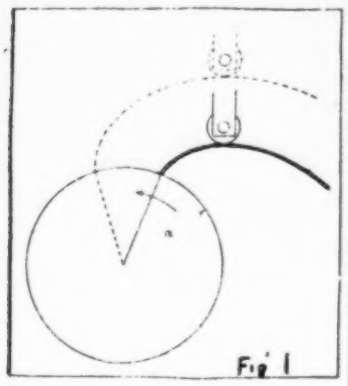
DLER

S.A.E. Production Session Opened at Detroit

Tanner Describes New Gear-Shaving Process

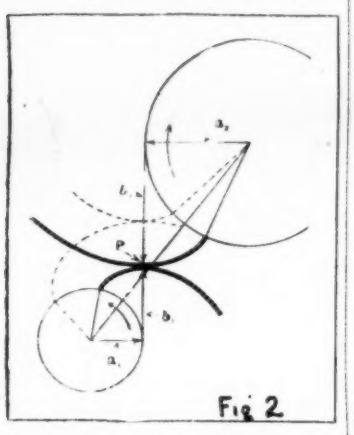
A new gear shaving process developed by Pratt & Whitney Company, Hartford, Conn., was described by H. D. Tanner at the S. A. E. Production Meeting Thursday as follows:—

"The involute curve, generated by a point in a straight line rolling upon a circle, can be considered as a constant-speed cam, as shown in Fig. 1, where the rise or fall of the



cam roll along the straight line tangent to the base circle is constant for each degree of revolution of the cam about the center of the circle.

"As applied to spur or helical involute gears, there are two base-circles with their involutes acting against each other, as seen in Fig. 2. In this case the point of contact P will rise or fall along the



common tangent at a constant rate per degree of revolution of either circle, the relative rates of revolution of the two circles being in inverse ratio to their diameters.

"Let us suppose that, as diagrammatically shown in Fig. 3, a cutting tool with a roughly formed cam is placed in a machine, and the tool is caused, by means of a master involute cam and roll, to move with its edge on a straight line tangent to the base circle of the master cam at a constant rate per degree of revolution of the rough cam. The tool then will cut on the rough cam an involute curve identical to that of the master cam.

"This is the method used in the gear shaving process, the invention of James H. Barnes of Dayton, O., which has been developed by the Pratt & Whitney Company with the assistance of the Chrysler Corporation.

"Fig. 4. is a diagram of the arrangement of cutting blades used in the machine. The blades, with their cutting edges on a line tangent to the base circle of the gear, move to the right while the gear revolves anti-clockwise, and to the left while the gear revolves clockwise, the relative velocities of gear and blades are determined by a master involute cam. The sequence of operations is as shown in Fig. 4, beginning with the mid position at the left, a cut starting in the center view and ending at the right. At this point the motions reverse and the blades move to the left, the right-hand blade following the path of the broken line relative to the roughed gear, and shaving another tooth face. After reversing again, indexing occurs during the return of the blades to the position shown at the left.

"The relative motions of gear and blades are exactly those of a gear turning in mesh with a zero-degree rack. The active profiles of the rack are only the sharp edges of the tops of the teeth, which lie on the line of tangency. In the machine two of the edges of the teeth are

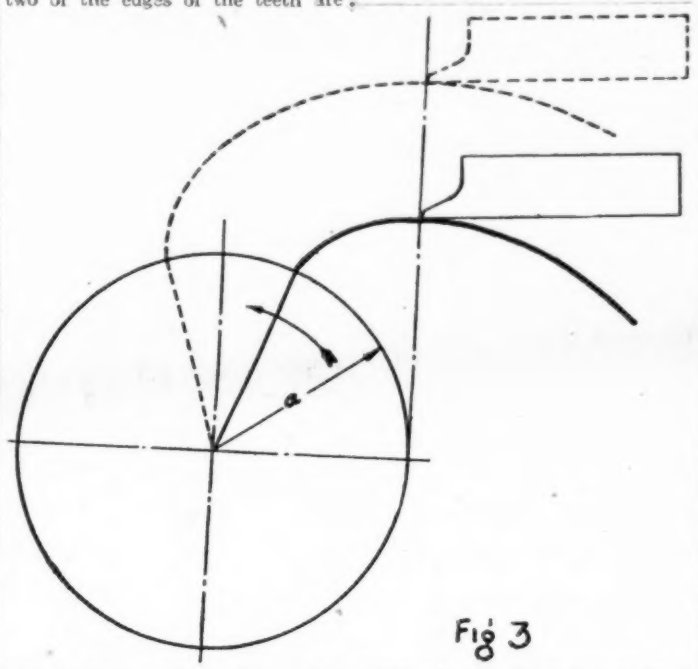
(Continued from Page 1)

engineering that acts as a sort of connecting link between the design of a car and its development preparatory to the actual production and the work of the line organization in the plant in carrying the car through to the finish end of the production line.

"In the progress of the automobile industry," said Mr. Keller, "there has been developed a new type of engineer. He is without question an essential part of the general plan. There has been built up a field of mechanical engineering that not only contributes valuable suggestions to the car engineering department, affecting the design of the car in relation to its production, but is also of assistance, because of the possession of practical experience, in creating new, efficient and economical methods of fabrication in the plant."

Mr. Keller also spoke in favor of a "department that might be called a 'buffer' department, working between the creators and the producers of cars, and with a definite understanding of the problems of both.

"This department, when properly organized and staffed with men of ability, should unshackle the car engineer. Its function should be to give the latter a bigger opportunity to express himself in terms of what the public wants and still work with the factory in producing volume with economy."



replaced by the cutting edges of the blades and successive teeth are cut by indexing. If the blades are set at an angle, like teeth of a helical rack, a helical gear can be cut.

"Tools are sharpened by grinding and stoning across the top edge, which is a straight line, because of the zero-degree method of generating the tooth form. In actual practice, the straight line sometimes is modified by grinding the front surface of the cutter to a concavity of about 0.0005 in. per inch of width. This produces gear teeth thicker at the center than at the ends, usually called crowned teeth, and is very effective in reducing uneven tones caused by misalignments of the teeth from any cause.

"As the working tooth-suruface in the gear-shaving process is given its final finish by one pass of one cutting edge moving in the direction of the roll or slide, there is little or nothing in the way of tool marks to cause noise.

"Due to the direction of cut, from the top of the tooth to the base circle, it is necessary to have a definite undercut for the blades to cut into to avoid leaving an objectional shoulder at the base circle. Gears are therefore rough cut, with special hobs or gear-shaper cutters with slightly thickened points. The pressure angle used on all hobs is 15 degrees, as this angle produces a shape in the undercut curves that is more favorable for our purposes.

"If used to rough a 20-degree gear, for instance, the lead of the hob is altered from that of a 20-degree hob so that the involute form produced on the gear is that of a 20-degree gear, although the clearance portion of the form is different from that which the 20-degree hob would produce. We have no such choice in using a shaper cutter, as, for example, the lowest angle at which a 21-tooth cutter can generate a full involute on a 15-tooth full-height gear is 16 degrees 9 minutes. This same cutter, when new, would generate at about 22 degrees.

"The point angle of the hob is made 7 or 8 degrees and the points are thickened enough to leave an undercut, in the finished gear, of from 0.004 to 0.006 inch.

"Let us take the mating of 33-tooth gear, cut with a 15-deg. hob. The required action is say 4.472 and the possible 4.720; there is no loss of action, although there would have been if a 20-deg. hob had been used. The theoretical number of teeth in contact with this pair of gears is 1.595 and the actual is 1.265. This condition sometimes is referred to as a tooth overlap of 59½ or 26½ per cent., which term will be used hereafter.

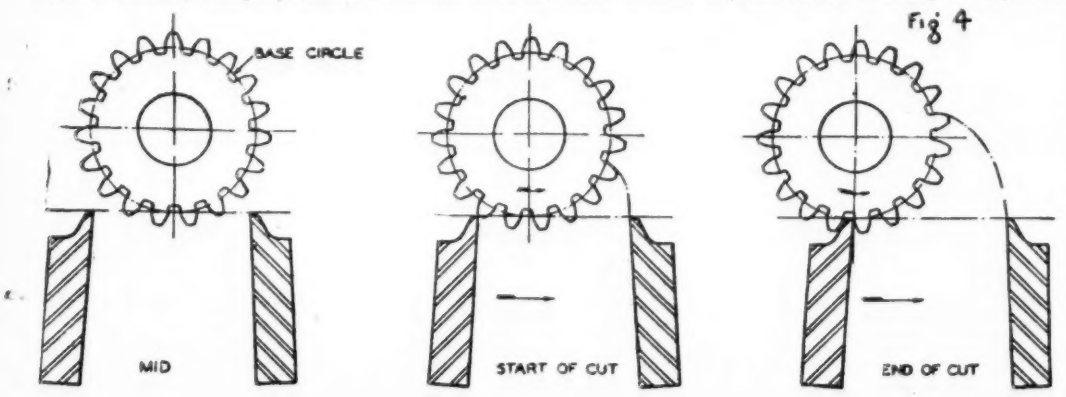
"There is a loss of action here which can be partially restored in two ways, if it is thought that a 26½ per cent. overlap is too small.

"One method is to use the more or less familiar long-addendum pinion and short-addendum gear. The other method is simply the use of a higher pressure-angle. This is effective in all cases, whereas the long and short addendum can only be used to advantage when the ratio between the gears is about 2 to 1 or higher.

"The higher pressure-angle reduces the diameters of the base circles and eliminates the use of the involute close to the base circle, which is very desirable, as this is the region of high sliding-velocities.

"Conditions on the second-speed gears are much better, as these usually have about a one to one ratio, with the numbers of teeth large enough for good action. The change to the higher angle is very effective in this case of the reverse pinion and idler gear.

"I have shown that the use of the 20-degree-pressure-angle gear in the conventional passenger-car transmission is a distinct handicap to the gear maker. A satisfactory overlap in the tooth action of gears cut by standard methods is obtained, in most cases, by the use of an involute close to the base circle, where it is more difficult to produce accurately and where its use causes a relatively high sliding velocity. As I have explained, with the present and probably continued method of roughing before shaving, the involute cannot be produced close to the base circle. The use of the 22½-degree-pressure-angle, while not a panacea for all gear troubles, would, I believe, result in a high percentage of better transmission."



Development of Honing Recounted by Williams

C. G. Williams of the Barnes Drill Company, Rockford, Ill., presented a paper at the afternoon session of the S. A. E. Production Meeting Thursday on the development of the cylinder honing processes and its application to many other types of similar work. Mr. Williams' paper was in part as follows:—

"Honing may properly be called a phase of grinding with a wide wheel. However, in external grinding with a wide wheel, when the work is longer than the width of the wheel, the wheel is fed to the work in the initial position; then, when the desired depth has been reached, the wheel is withdrawn, moved to another location and again fed to the work. In contrast with this, the hone, which is of expanding construction and, in the latest types is under a powerful feed for expansion, is reciprocated or fed rapidly along the surface of the work, and therefore the process takes on the nature of grinding with both a wide wheel and a narrow wheel; but, because of the length of the stones, the slight chatter-marks that are to be detected on all surfaces ground with the narow wheel are eliminated, as is also the tendency of the wide wheel to be scored at various points by hard spots in the work. When a grinding-wheel is thus scored, it has to be trued up before it is removed to a new location, or the score marks will communicate themselves to the work when the next cut is taken.

"Another objection to the use of the narrow wheel in grinding, which is avoided in honing, is that, when a cylinder-block is bored, the boring tool has a tendency to dig to a slight extent into the soft spots that are found in almost all cylinders, and leave them hollow. These hollows may or may not be entirely removed by the reamer, but the fact has been impressed upon us that reaming also leaves low spots in the cylinder-walls and may also result in a cylinder that is tapered from a fraction of a thousandth up to several thousandths of an inch in the length of the bore.

"Where soft spots exist, the narrow grinding-wheel (and the cup wheel is to be classed as a narrow wheel) also digs in slightly, so that depressions appear after even very careful grinding. At first these were thought to be the effect of chattering, but it was shown that chattering exists apart from the low spots, because the chatter marks appeared in the low spots, although to a less extent than over the hard spots, thus indicating that soft spots existed and that the natural spring of the spindle allowed the wheel to enter the spots and remove metal from the surface. The long honing abrasive-sticks, however, bridge over these low spots as the hone is simultaneously rotated and reciprocated, until the hard spots are cut down to the level of the hollows, after which the whole surface is reduced at the same rate, the hard spots being cut down to the depth to which the soft spots are cut. Thus the honing process leaves the cylinder-walls round and parallel, free from taper and smooth in proportion to the fineness of the abrasive stone.

"For honing cylinders of automobile engines, it is considered necessary that the final reaming operation shall leave the cylinder wall in as nearly perfect condition as possible, so that little time will have to be spent on the honing operation. If, in the final reaming, any bore is not perfectly true, if the walls are not parallel or are tapered or bell-mouthed, the inaccuracy can be corrected in honing, and any pockets can be removed also if they are not too deep. But honing will do little or nothing to correct misalignment, according to the present practice, if the axis of one bore does not lie in the same plane as the axis of the other bores. Rather, the purpose of honing is to straighten inequalities of the bore and to give the smoothest finish that it is possible to produce under present production methods.

"Much difference of opinion has existed as to both the number of revolutions per minute at which to run the hones and the strokes per minute of reciprocating. At first, some experimenters advocated 200 r. p. m. and two or three cycles per minute, one up and one down stroke comprising one cycle; while another experimenter would positively assert his belief that 10 or 15 revolutions and 150 cycles per minute were the best. Various combinations of speeds have been tried, and it can now be stated confidently that the best speeds to employ for automobile engine cylinders seem to be a peripheral speed of about 200 to 250 feet per minute and a reciprocating speed of 50 to 60 cycles per minute.

"Great similarity exists among the hone-heads made by the various manufacturers. Six companies are now making hone-heads, and most of them employ the same principles of construction and application. The abrasive stones have, on the whole, been slowly reduced in size until, whereas formerly the approved size was 6 inches long by ¾ inch, square, today's practice is to employ stones 4 inches long, ½ inch wide and ⅝ inch thick. This size gives better results than either longer or shorter stones excepting on work more than 4 inches in diameter and requiring a stroke of 12 inches or more, on which longer stones are employed.

"One of the great problems encountered has been to obtain stones of proper grit and composition for the work at hand. The making of stones is a new process and we are not yet assured that any two

(Continued on page 9)

Detroit Papers Cover New and Proven Methods

Younger Explains Ford's Low Production Costs

The production policies of the Ford Motor Company were described by John Younger of the Ohio State University at the S. A. E. Production Meeting Thursday in part as follows:—

"Formerly the art of management was regarded as a talent born in a man. We still speak of a man as a 'born' leader, and to a certain extent we are right. However, certain laws of management that follow economic laws have been laid down as an aid to leadership.

"The laws of management were first put into concrete form by L. P. Alford in a paper presented before the American Society of Mechanical Engineers as recently as December, 1926. It is not known to what extent industrial companies know these laws and follow them consciously, but it is my impression that the Ford Motor Company, and particularly Henry Ford, has long been aware of them, having originated some of the principles, and has followed them with advantage.

"One law is stated thus: 'Concentration upon the manufacture of a single or a few types and sizes of product tends to improve the quality and lower the production cost.'

"Evidence that the Ford Company observes this law is that it makes only one model of car in one factory; but Mr. Ford's interpretation of the law goes much further. Let us consider the Ford plant. At first sight it is a bewildering maze of machine tools seemingly unrelated to one another. Closer observation reveals that the plant consists of a multitude of small shops, each concentrating upon one product. Pistons, for example, are made in their own department and nowhere else. Never does the drilling of a piston-pin hole stray into the drilling department for connecting rods. Each article is kept distinct, even at the expense of some duplication of operations, and much resulting economy is effected.

"One of the interesting sights in the Fordson plant is the glass-making industry. This is located adjacent to a steel-making plant and a machine-tool shop, and maintains its separate identity, and is one of many individual shops that comprise the Ford plant.

"One of the most spectacular of the Ford achievements is the conveyor systems. These conveyors, however, are only a means to an end, the end being the reduction of costs; and they exemplify the working-out of the following law:—

"'Subdividing work so that one or a few manual or mental operations can be assigned to a worker tends greatly to improve the quality and increase the quantity of output.'

"Following this law is the similar one:—

"'Assigning to each worker one or a few manual or mental operations which he is adapted to perform greatly improves the quality and increases the quantity of output.'

"Rarely does a man in the Ford organization perform more than one operation.

"The conveyor also illustrates the working out of another law:—

"'The highest efficiency in the utilization of materials is obtained by providing the required quantity of the required quality and condition at the required time and place.'

"Note that little word 'time,' reflect that all conveyors are not only handlers of materials but pace setters, and the tremendous potenialities of the conveyor will be realized.

"Consideration of the conveyor leads to consideration of the Ford system of wage payment.

"This is the law on the subject:—

"'The average worker accomplishes most when assigned a definite amount of work to be done in a given time.'

"Note the phrase, 'in a given time,' for in it lies the solution to the problem. The Ford company does not pay its men on the piece-work, premium, bonus or any other system than the straight day rate. The men must, however, positively accomplish the given task in a given time. The conveyor system, or direct handling, takes care of this.

"The piece-work basis offers a premium in extra wages for doing the work in less than standard time.

"The Ford organization does not want this. If a worker does his operation in less than a given time, he creates a vacuum behind him and a surplus in front of him. Both results are inimical to decrased costs of production.

"Another Ford policy noted is that of constantly reaching back to the source of raw materials. This policy has an important bearing on cost reduction, as will be seen. Coupled with this policy is that of constantly trying to reduce inventories of material in stock and in process. The savings resulting from this latter practice are obvious. The former policy may seem difficult to apply; yet, when the situation is analyzed, it will be found that the small foundry which puts in its own pattern shop is, in its small way, reaching out toward the Ford ideal.

"A most important policy that is also combined with the foregoing is that the Ford company takes no intermediate profits. Only when the finished unit is assembled into a Model A car is a profit taken.

"As previously mentioned, the Ford company keeps its material inventories low. It also follows the policy of keeping the material in rapid motion, thereby getting a quick material turnover. In theory, material lying idle or at rest is regarded as just so much money not earning anything, or as so much labor at a standstill. Executives in many plants recognize this factor of loss, but few pay as much attention to it as does the Ford company, which makes strenuous efforts to keep actually in process the material that is nominally in process, so that virtually all the material inventory may be said to be always in transit.

"It is exceedingly difficult to calculate the turnover of Ford's material as a whole.

"A few years ago the company had a turnover of fifteen times each year. In other words, each year it took a profit fifteen times on its raw material. Today it can take a profit fifty times, or apply the saving toward a reduction in factory costs.

"Some years ago there was much controversy as to the merits of specialized versus standardized machines. Henry Ford has but one answer to this problem. The machine that is least costly to operate, consideration being given to all phases of operation, is the one he uses. He does not regard machine tools merely as a means of fabricating his product; he looks upon them as a means of lowering costs and studies them constantly with this in view. No machine tool of a different type or model is purchased unless it can be proved conclusively that it lowers production cost. Fully automatic machines that require the minimum of labor control are acquired, so far as possible. Mr. Ford holds that hiring two men to do work that can be done by one is a crime against society.' If one machine can do several operations simultaneously in the same floor space that is occupied by several machines and with but one attendant, the purchase of the machine is indicated, because it saves in ultimate cost of the product.

"The factor of obsolescence is today more potent than that of depreciation by wear. Machines should become worn out simultaneously with their obsolescence. This policy also undoubtedly leads to lowered production costs.

"Incidentally, it is worth nothing how the company utilizes standardized periods in determining when a machine is ready for the overhaul shops. A new machine, when broken in, will perform its work in a standard period with normal maintenance effort. As it wears, greater effort will be necessary to maintain accuracy of the work it does, and this care or effort will require more time. There is a natural tendency for the standard time to be over-run; but before this happens the machine is removed from the line to be overhauled.

"Few companies seem to recognize this correlation between standard time and wear, and consequently the machine is kept in use beyond the economic point. Attention to this detail undoubtedly will result in a saving in production costs.

"Finally, we come to the use the Ford company makes of the principle of simultation. This principle is worthy of observance, as it has effects in the direction of economy that are so far-reaching in mass production, I believe, as to have an important bearing on American prosperity. To E. P. Blanchard should go the credit for first elucidating this principle and giving it a name.

"The law of simultation may be expressed thus:—

"'Performing two or more processes simultaneously and in harmony on one machine with the same amount of labor as for one operation leads to maximum economy.'

"To illustrate, consider, first, common procedure in many plants where it is thought ample to provide one fixture for a given operation. With only one fixture in use, the machine necessarily stands idle while the workman is loading and unloading it. With two fixtures, the man can be loading one while the machine is operating on the work in the other. Next, carry this process a step further, as the Ford company does, by providing specialized machines, one part of which is drilling, let us say, using one fixture, a second part is simultaneously reaming on a second fixture, while a third part of the machine may be tapping work in a third fixture. During these operations, a fourth fixture is in the hands of the operator, who unloads, cleans and reloads it.

"For the same expenditure on fixture design, for the same or a little greater machine expense and for the same labor cost it is possible to have a man and a machine working 100 per cent. of the working hours, with resulting economies that are surprising. The principle can be applied to machines as well as to men, and is embodied in such machine tools as the Newton and Ingersoll milling machines and in the Bullard Multau-Matic. The Natco and similar drilling machines are also examples. To carry the principle to its fullest extent, every individual operation in a modern mass production enterprise, whether it is handling, fabrication or assembly, should be in process simultaneously and in co-ordination throughout the plant.

"In effecting the economies mentioned, quality need not suffer. To quote again from Mr. Alford's laws of management:—

"'The quality of manufactured goods is a variable with an upward trend under conditions of competitive manufacture.

"'Control of quality decreases costs of production and makes economic mass production possible.'"

Fifteen Laws of Management

FIFTEEN RULES of management, based on economic laws, which are claimed to be the basis of the lost production costs of the Ford Motor Company were given at the production meeting of the Society of Automotive Engineers, this morning by John Younger of the Ohio State University as follows:—

10. Foregoing the taking of intermediate profits on processes between raw materials and finished product.

11. Keeping materials and parts in rapid motion to assure quick turnover.

12. Using machine tools that give the lowest production cost and require the least manual control.

13. Employment of machines that perform several operations simultaneously with the same amount of labor as for one operation.

14. Sending machines to the overhaul shops at standardized periods.

15. Recognition that the obsolescence factor is more potent than depreciation of machines by wear.

1. Concentration upon a single product.

2. Keeping each article distinct.

3. Extensive use of conveyor systems.

4. Subdividing work so that each worker has only one or very few operations to perform.

5. Providing the required quantity of material of the specified quality at the required time and place.

6. Assigning a definite amount of work to each man to be done in a give ntime.

7. Wage payment on the straight day rate.

8. Acquirement of sources of raw materials.

9. Reduction of inventories of mateerials in stock and in process.

Williams Outlines Development of Cylinder Honing

(Continued from Page 8)

batches of stones, although nominally of the same grit, composition and degree of hardness, will give equal length of life, nor that two sets of stones in the same order will give the same service life. Conditions seem, however, to have changed somewhat for the better within the last few months, and the stones seem to be more uniform.

"Whereas, up to the first of this year, users and prospective users of honing-machines have looked upon honing as only a final conditioning process, and required that the cylinder be finish-reamed to as fine a finish as possible, the trend seems to point to a gradual awakening to the fact that it is suitable to use for removing metal on a large scale.

"It was felt as late as eighteen months ago that the honing of steel cylinders, and especially heat-treated or hardened cylinders, could not be accomplished successfully, but the testing carried on during the last few months shows that steel in all of its degrees of hardness, from cold-rolled steel to glass-hard tool-steel, can be honed successfully as a commercial operation. But it is only by experimenting to determine the grade and grit of stones to be used as well as the correct spindle speed in revolutions and number of reciprocating strokes per minute, that successful honing of these cylinders can be accomplished.

"Success in grinding brass, bronze, and Monel metal has not been approached by honing to my knowledge. The few experiments conducted with these and other nonferrous metals have shown that much experimenting and study must be done before it can be said that the problem has been solved.

"Some of the new developments have been the honing of Diesel-engine cylinders, large gas-engine cylinders and air compressors, and the application of honing to railroad work in the reconditioning of locomotive appliances such as air-brake cylinders, air-compressor cylinders, power-reverse cylinders, air cylinders for firedoor operating mechanism and booster-engine cylinders. As time goes on, new uses are shown for the process, such as honing the bearing surfaces of crankshafts of some of the larger gas-operated stationary engines producing a finish that cannot be surpassed; honing needle-valve cylinders for Diesel engines, locomotive side rods and cast iron main-rod floating bushings, and honing steel bushings 1 inch in size and larger if they are stacked in a jig. Each new use seems to necessitate further experiments to make it a success, as a hone that will give the best results in a hard, close-grained cast iron will not give comparable results in a porous iron or in the so-called semi-steel. Honing the new types of cast iron, such as gunite, needs stones of still another type and grit.

100% gain in October

For October, sales of Whippet and Willys-Knight motor cars were twice as great as sales for October 1927.

October was the tenth consecutive month to set a higher sales figure than the corresponding month of last year.

Throughout 1928, the value of the Willys-Overland line has been higher than ever, prices have been lower than ever—and sales have been greater than ever!

WILLYS-OVERLAND, INC., TOLEDO, OHIO
WILLYS-OVERLAND SALES CO., LTD., TORONTO, CAN.

FOURS **WHIPPET** SIXES

WILLYS-KNIGHT SIX

S. A. E. Hears Papers on Gears, Accounting

Baron Outlines Method of Depreciation Accounting

Depreciation accounting was discussed at length in a paper presented by L. A. Baron, of the Stutz Motor Car Corporation, which was in part as follows:—

"Accounting for the depreciation of plant and equipment and applying that charge to the product produced is a large problem. No one man could cover the subject in all its details.

"The Chamber of Commerce of the United States says: 'The business man who does not charge depreciation at all is fooling himself. He is making no provision for the inevitable day when his property must be scrapped. His supposed profits may be in fact a distribution of his capital.

"The business man who waits until the end of the year to determine his depreciation according to the size of his profits may make the discovery that he has no profits, since he has consistently sold his product upon a cost that was incorrect, a cost that did not include such a necessary expense of manufacture as depreciation.'

"Depreciation is the decline in the value of plant and equipment which is certain to occur as a result of wear and tear and gradual obsolescence. It is caused by the possession and use of an asset, and is therefore a part of your cost of production.

"Each turn of a lathe, every twist of a drill and each blow of a hammer helps to wear out your plant and equipment. Depreciation continues, even though your plant remains idle. Each item you produce which causes this wear should bear its proportionate share of depreciation costs.

"It should be a function of management to determine and to set the rates of depreciation and the method of apportionment. These rates should be based on normal production. By 'normal' I do not mean average. Normal is your 100 per cent. mark, above which your organization registers in times of unusual or excessive production and below which it drops in times of curtailed production.

"By all means be conservative when determining the useful life of a piece of property.

"Having established a reasonably useful economic life for each class of plant or equipment, it is necessay to determine a method of calculating the costs and applying it to production.

PROPER CLASSIFICATION

"A suitable classification of property is a prerequisite for the proper recording of depreciation. Do not make the mistake of grouping assets under such general terms as 'buildings,' 'machinery' or 'equipment.' The term 'buildings' may include wood, concrete, steel or brick structures designed for heavy or for light use. The term 'machinery' may comprise electrical generators and steam engines, hydraulic presses and steam hammers, lathes, planers and boring and milling machines, wood-working machinery and small tools. The 'equipment' may vary from a locomotive to pickling tanks, from gas furnaces to fire systems. The span of usefulness of these assets may vary from three to thirty-three years, yet all will bear a 3 per cent., 5 per cent. or 10 per cent. rate of depreciation; nor will it be possible to determine the depreciation record or history or the undepreciated value of any specific unit or type of property.

"Hence, a proper record of depreciation requires that the specific items and units of property be enumerated and classified by kind, group or department, and that their original cost be ascertained as well as the accumulated depreciation and the remaining useful life.

"Depreciation as a production charge becomes one of the elements in your overhead or burden cost, and it should be distributed to your product in the same way in which you distribute the other items of overhead or burden.

"As many methods are in use for the purposes of distributing burden to production as there are methods of apportioning depreciation, the method which is meeting with the greatest favor is the 'production-center' or 'machine-center' plan. This calls for the grouping of equipment into production centers or units such as drill-press centers, punch-press centers, lathe centers, automatic centers and the like; or, in cases where you have line production, it would be your assembly-line center, or a production-line center such as a cylinder-head line, cylinder-block line and the like.

"When this method is used the depreciation of buildings usually is applied to the center on the basis of floor space occupied. The 'center' is also charged with the depreciation on all of the equipment used within that space. These depreciation charges, together with your other overhead or burden charges, should be applied to the product of the production center on the unit basis, on a standard-time basis, or on a percentage-of-labor plan.

"Depreciation for jigs and fixtures should not be confused with machine-tool depreciation. A jig or a fixture is made for the production of a specific item, while a machine-tool may be purchased for the production of a specific item, but usually can be used for the production of other items. A jig or a fixture should be depreciated as quickly as possible, consistent with good practice.

"The contention is made that the depreciation charge should be such that it will allow a return of the value of capital invested, and that unless depreciation is taken on a basis of replacement cost the value of the capital invested will be impaired greatly. This would be true if the reserves which are set up for the replacement of depreciated items were allowed to remain idle. But such reserves do not remain idle; they usually become a part of your working capital and give you a return equal to the earnings you make on the balance of your working capital.

"Earnings derived from the work of your depreciation reserve should not be passed out as dividends. They should be passed on to your surplus.

"I shall conclude by quoting a few rules as a guide on depreciation charges, as follows:—

"1. Be conservative in your estimate of the economical useful life of your plant and equipment.

"2. Set up your plant ledger not only for present use, but as a guide for the future.

"3. Charge your depreciation to your product.

"4. Collect that charge when you sell your product.

"5. Hold that charge in a reserve for plant replacement.

"6. Budget your cash expenditures so as to allow for replacement when necessary."

SIGNS STIPULATION TO CURB ITS ADVERTISING

Special from A. D. N. Washington Bureau

Washington, Nov. 22.—A firm engaged in the manufacture of a "vaporizer and decarbonizer" for automobiles has just signed a stipulation with the Federal Trade Commission agreeing to discontinue misrepresentation of the substance.

Their advertising contained such statements as "Five hundred dollars per month selling a new patented Fuel Vaporizer, guaranteed to save up to 50 per cent. in gasoline" and "forty miles per gallon with Ford car."

The name of firm is withheld by the commission, but facts were presented showing methods of competition which the commission condemned as unfair.

KELSEY-HAYES WHEEL CORP. DECLARES REGULAR DIVIDEND

Detroit, Nov. 22.—Kelsey-Hayes Wheel Corporation declared the regular quarterly dividend of 50 cents on the common, payable January 2, to stock of record December 20.

OAKLAND PLANT PROJECTS TO EMPLOY 3,000 MEN

Detroit, Nov. 22.—Construction projects of the Oakland Motor Car Company, nearing completion at Pontiac, will provide factories to employ 3,000 additional men.

Gear Breakage, Wear and Noises Discussed by Cox

A. B. Cox, a consulting engineer of Wilkensburg, Pa., presented a paper on gears and gear breakage, which is printed in part herewith.

"The problem of designing a set of gears to obtain the maximum load-carrying capacity; that is, strength for the money invested is not simple.

"The single-tooth contact gearset is not the strongest possible design, but the strength of the individual teeth can be made the greatest possible for this type of design by using as large a pressure angle and as large a fillet at the root of the tooth as possible without interfering with the teeth of the meshing gear. The size of the root fillet makes more difference in the strength of the teeth than is commonly realized. The best tooth fillet is not a circular arc.

"The safe strength of all single-tooth-contact gears must, of course, be calculated for the position of mesh that is of least strength. This position, in perfectly accurate gearing, is that in which the trailing tooth has not quite come into contact and the leading tooth is carrying all the load.

"A set of standard full-depth teeth exactly similar to the standard sub-teeth except for the tooth depth and size of root fillet are very little stronger, if both sets are assumed to be accurately made and mounted, and they are very much weaker if sufficient inaccuracy exists in the gears to cause the load to be carried on only one pair of teeth at the end of the contact zone.

"A set of gears designed so that they will always have two pairs of teeth in contact, no matter what the relative positions of the gears may be during rotation, assuming that the gear teeth are accurately formed and spaced so that the total load pressure transmitted by the gears is shared by the two pairs of contacting teeth, are in the weakest position when the leading pinion tooth is just on the point of dropping its load. On account of the relatively greater deflection of the leading tooth, it carries less than half the transmitted load pressure, although there are factors which tend to make up for this condition. The tooth is loaded as a cantilever with the force applied at the greatest possible distance from the root. The trailing tooth is carrying the greater load-pressure, but, since the force is acting on it at a point much closer to the root than is the case on the leading tooth, this tooth is less likely to break than is the leading tooth. At first sight the pointed tooth looks weak, but the inscribed equal strength parabola shows that it is as strong at the tip as at the root; that is, the teeth are substantially constant strength cantilevers. The minimum total steady load strength of these gears is therefore the sum of the strengths of the leading and the trailing teeth.

"Supposing that, in these two-tooth-contact gears, because of errors in tooth contour and tooth spacing, the trailing pair of teeth does not make contact in time to help in carrying the load as intended by the designer, three things tend to relieve the condition:—

"1. Under any practically permissible error of modern commercial gearing, the leading tooth will deflect sufficiently to overcome the effect of the error and cause the trailing tooth to come into contact long before the breaking stress in the leading tooth is reached.

"2. If the load on the leading tooth is further increased up to the breaking point the trailing tooth will take up an increasingly greater proportion of the total gear load as the leading tooth deflects, on account of its much smaller deflection; and, by the time the stress in the leading tooth reaches the breaking point, the trailing tooth will have taken up so large a share of the total load that its metal also will be close to the breaking-point stress.

"3. Because wear of gear-tooth contours is due primarily to tooth pressure, if there are errors of either tooth contour or tooth spacing, which tend to make any pair of teeth carry more than their share of the load, these teeth will wear down more rapidly than the more lightly loaded pairs of teeth. The effect of this wear is easily seen to be toward the equal division of the total-load pressure among the pairs of teeth in contact.

"Since gear teeth seldom break under steady load but nearly always under shock load, the high shock load strength of integral contacting gears makes it possible to design such gear with a very low factor of safety for steady load. This increases the total load-carrying capacity of integral contacting gears still further beyond that of other gears.

"Also it is a matter of actual observation that integral contact-gear teeth tend to wear so as automatically to correct the tooth form and that other gears tend to wear out of shape.

"The excessive tooth-stresses set up by the mechanical resonance of non-integral-contact gears affect the wear of the teeth, of course, as well as the strength. This is the only plausible explanation of the otherwise inexplicable pitting of some underloaded gear-teeth. By combining gear-tooth-strength formulas with wear formulas, it can be shown that, to have somewhere nearly the same factor of safety against wear as against breakage, much finer pitches than are now customary should be used for a given transmitted load.

"Sometimes gears that are quiet when new become noisy as they wear in service, and other gears that are noisy when new 'wear in' and become quiet as they wear in service. Still other gears show no appreciable change in the noise made from the time they are first operated until they are worn out.

"To obtain exceptional quietness in new gears, exceptional accuracy in the manufacture and assembling of the gears must be maintained. However, it is a matter of common knowledge that, in some instances of ordinary gear design, no degree of accuracy alone is sufficient to prevent noise. The remedy for this condition is to use integral-contact gears.

Conclusions

"From the foregoing partial outline of accumulated evidence of theory and experiment, it is safe to conclude that integral-contact gearing is the solution of most of the baffling problems of gear-tooth fatigue and breakage, wear and pitting, and vibration and noise. Compared with other modern gearing of the best designs, integral-contact gearing has shown itself to have the following qualities:—

1. Much greater strength, both for steady load and for shock load.

"2. Much longer life; or smaller dimensions or cheaper materials or cheaper manufacturing processes for the same strength and length of life.

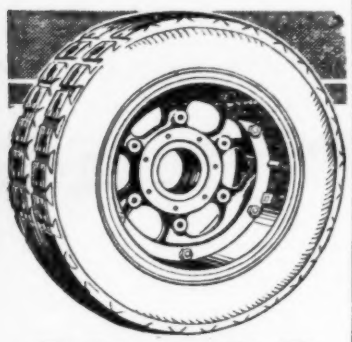
"3. A greater degree of both initial quietness and enduring quietness. This type of gearing should be particularly suitable for automobile transmissions, timing gears and for replacing spiral bevel drive gears and straight-bevel gears."

OBERHEU INSPECTING UNITED MOTORS UNITS

Special from A. D. N. Detroit Bureau

Detroit, Nov. 22.—Fred A. Oberheu, sales manager of the United Motors Service, has just left on a three weeks' trip to the Pacific Coast, inspecting United Motors branches along the way. He is accompanied by George T. Albright, manager of radiator sales and in charge of all branch service departments of the company.

Mr. Oberheu's trip is for the purpose of acquainting the branches with the company's new policies for 1929. The itinerary includes Chicago, Des Moines, Omaha, Denver, Seattle, San Francisco and Los Angeles. At Des Moines, a new branch has been established and the Seattle branch is moving into larger quarters. Mr. Oberheu will conclude his trip in time to be at New York for the opening of the Automobile Show.



20,000 MILES to the Tire on Daytons

An average of 20,000 miles and over to the tire on Dayton Dual Pneumatic Steel Wheels—what a selling feature for your truck or bus!

Fleet owners have realized that a serious profit leak resulted from cheap wheels—wheels that were not perfectly aligned—wheels that did not properly cool tires and brake drums. Now they are showing a decided preference for motor vehicles with Dayton equipment, knowing they will save money in the l-o-n-g run.

Write for Specific Information

THE DAYTON STEEL FOUNDRY CO.
Dayton, Ohio

Dayton
DUAL PNEUMATIC
STEEL WHEELS

WISCONSIN AXLES

Wisconsin superiority has been demonstrated for more than ten years; it can be demonstrated on any test. Built for trucks from 1½ tons to 7 tons, for busses and 6 wheelers.

WISCONSIN PARTS CO. Oshkosh, Wis.

C. H. McALEER CO. MAKES TWO-CARLOAD SHIPMENT

Special from A. D. N. Detroit Bureau

Detroit, Nov. 22.—Reflecting the growth of its business, the C. H. McAleer Manufacturing Company of Detroit has begun the carload shipment of its product to the Pacific Coast. The company manufactures polishing products for automobiles and its initial shipment of this class was a two-car lot, consigned to San Francisco for distribution in the coast district.

SEIBERLING CONFIRMS BUYING CALIFORNIA LAND

Akron, O., Nov. 22. — F. A. Sieberling, president of the Seiberling Rubber Company, has confirmed the report that his company has purchased 100 acres of land in the eastern part of Oakland, Cal.

ILLINOIS OIL COMPANIES LOSE IN GAS TAX SUIT

Chicago, Nov. 22.—Circuit Judge Charles G. Briggle, sitting at Springfield, decided against the oil companies which brought suit for a refund of the gasoline tax fund amounting to $6,392.000 paid into the state before the law was declared unconstitutional. However, he ruled that the companies were entitled to a refund of $578,000, collections made during January, 1928, which were paid to the state in February and tied up in the state treasury by injunctions. The gasoline companies will appeal to the state Supreme Court.

COMPLETE SEPTEMBER, 1928, NEW COMMERCIAL CAR REGISTRATIONS

Figures in this table are from R. L. Polk & Co. of Detroit, with the exception of Illinois, which are supplied by the Robinson Advertising Service of Springfield, Ill., and New Jersey, which are furnished by the Automobile Sales Record Corporation, Trenton, N. J. Readers desiring county, city or town lists or lists of owners in any given section may obtain these by addressing any of these three companies.

States	Autocar	Brock-way	Chev-rolet	Dia-mond-T	Federal	Ford	G. M. C.	Graham	Indiana	Inter-national	Mack	Pierce-Arrow	Relay	Reo	Republic	Ruggles	Sterling	Stewart	Studebaker	Whippet	White	Willys-Knight	Yellow	Miscel-laneous	Totals	States
Alabama			44		1	14		1												2					62	Alabama
Arizona			83			25	5	28		5	1			5				1	2	3		4		3	165	Arizona
Arkansas			175		2	94	16	26	2	36	3			4	1					3	9			1	372	Ark.
California	13		455	4	21	292	88	296		54	17	2	2	93	4		22	12	21	5	17	2		159	1579	Calif.
Colorado			178		1	82	30	38		21	1			3	1				1	1	8			4	369	Colo.
Conn.	7	8	166	3	4	117	35	73	1	16	19		3	61	1			15	6	4	6	1		11	557	Conn.
Delaware			44			19	4	4		8	3			4				1						1	88	Del.
Florida			67			94	9	8		8				10					1	1	1				199	Florida
Georgia	2		250	1	2	121	16	47	10	16	5			2					3	6	7			1	489	Georgia
Idaho			118			31	5	36		37				15	3				1	1	4			11	262	Idaho
Illinois	2		635	71	12	385	68	133	18	117	24	1		46	4		5	3		19	19		3	98	1663	Ill.
Indiana			461	3	7	273	50	73	20	44	2	1	2	36				2	12	8	6	1		8	1009	Indiana
Iowa			371		5	171	39	68	2	120	9			31					3	1	3			4	827	Iowa
Kansas			240	3		102	29	56	2	99	1			8	1				2	3	2			3	551	Kan.
Kentucky			191	2	3	108	15	34		35	6		5	13	3				6	2	3	1		14	441	Ky.
Louisiana			130			119	22	27	1	51	4			3						4	4			1	366	La.
Maine			180	1	1	83	9	26		30	4	1		23					2	1		1		8	370	Maine
Maryland	12	2	146	16	2	101	24	21	1	23	11	2		30	1	1	1	3			11			3	411	Md.
Mass.	17	14	302	6	15	212	65	125		47	24	6	2	80		1	13	5	3	2	21			18	978	Mass.
Michigan	7	1	1027	6	25	499	82	165	1	114	23	5		108	5	10			2	18	13	3	6	64	2184	Mich.
Minnesota			415	1	10	259	30	64		167	6			43	1				3	7	7	4		4	1021	Minn.
Mississippi			166	1	2	109	6	22	36				1	5	1					2	15			5	371	Miss.
Missouri	5		365	22	6	279	32	84	6	65	5	1		19	3		1		2	9	5	1		10	920	Missouri
Montana			358		1	35	40	74	3	194				51				1	1		9	6		1	774	Mont.
Nebraska			264		1	91	23	33	3	98	2			10					2	1		4		6	538	Neb.
Nevada			10			7	3	16		1				1							1			3	42	Nevada
N. Hamp.	1		64		3	43	12	21		11	1	1		13				1	1	2	3	1		3	181	N. H.
New Jersey	21	24	553	9	29	234	88	163	2	61	60	11	3	86	2		14	10			27		1	52	1450	N. Jersey
N. Mexico			88			5	6	16		22				1							3	1		2	144	N. Mex.
New York	27	104	976	32	20	479	150	310	1	126	103	30	2	139	6		5	42	7	21	86	4		147	2817	N. Y.
N. Carolina			450		1	176	28	57	2	22	3	1		14	2			1		8	8		1	8	782	N. C.
North Dak.			597		1	87	64	77		336				15						2	2	3		4	1188	N. Dak.
Ohio	22		741	5	19	375	64	151	6	120	21	10	7	80	1		3	9	5	32	63	9		49	1792	Ohio
Oklahoma			295	1	2	159	19	87	2	71	6	3		20				6	2	9	9			7	698	Okla.
Oregon			94		6	46	13	31		19	1			12	1				2	2	4			13	244	Oregon
Penna.	40	36	789	19	13	426	110	265	3	143	48	9	11	102	10		23	36	17	37	46	4	2	76	2265	Penna.
Rh. Island	2	1	63		3	57	22	24		7	2	1		13			3	6	2	1	5			7	219	R. I.
S. Carolina			186		1	61	33	20	1	20	4			3					1	4	2			3	339	S. C.
S. Dakota			284		1	32	29	37		224	3			13				4		2				3	632	S. Dak.
Tennessee	2		339		12	94	38	64	5	46	8			19	2				5	1	12	1		3	651	Tenn.
Texas	3		976		8	467	86	137	6	160	10		7	53				1	5	27	17	1		15	1979	Texas
Utah			59			51	5	30		16				4					2		2	1		3	173	Utah
Vermont			51		2	24	8	21		14	2			11				3	2	1	1				140	Vermont
Virginia			338	1	2	151	21	44	2	39	3	2	2	18	7			2		4	11	1		2	650	Va.
Wash'gton			172		7	85	17	52		40	1			21						3	11			39	448	Wash.
W. Virginia			178		2	51	11	45	7	21		5	2	10	1			1	2	9				8	353	W. Va.
Wisconsin			400	18	18	244	48	83	1	105	7	1		35			8	9	3	13	7	1		33	1034	Wis.
Wyoming			109			16	7	12		39	7			6						1	2	1		1	201	Wyo.
Dist. of Col.		1	47	4		56	9	6	1	2	4			3						1	1	1		1	137	D. of C.
Totals, 1928	183	191	14690	229	271	7141	1633	3331	145	3070	464	96	107	1335	60	12	98	174	129	283	493	57	13	920	35125	T'ls, '28
Totals, 1927	181	146	11626	161	349	2476	675	3282	93	1455	470		*41	1191	82	19	49	108			503		57	1475	24439	T'ls. '27
Totals, 1926	167	121	6206	136	455	18261	224	3965	69	1245	619		*47	1069	75	20	57	91			731		137	1280	34981	T'ls, '26

1927 Footnote—Acme, Pontiac and Selden are included in the miscellaneous col. *Garford at that time.
1926 Footnote—Acme and Selden are included in the miscellaneous col. *Garford at that time.

OCTOBER, 1928, NEW COMMERCIAL CAR REGISTRATIONS

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Arkansas			282		4	150	19	33	5	45				9						4	6			3	560	Ark.
Delaware	2		32			36	5	8		9	1		1	7					1	1	3			1	107	Del.
Illinois	3		602	58	9	514	61	138	11	143	19	4		43				2		13	20		7	115	1762	Illinois
Kansas			240	2		165	31	63	1	70				16	1				4	2	2		1	7	605	Kansas
Maryland	9	3	153	3	2	163	24	27		27	17		1	21	2		3	7		1	4		1	14	482	Md.
New Hamp.		2	62		7	36	7	28		13	1	2		7				1		1		1			168	N. H'mp.
New Jersey	32	21	422	7	31	302	53	152	2	30	46	15	2	80	1		7	7			36			39	1285	New Jer.
Nor. Car.	1		388		1	284	20	69	3	29	6			19	4	1			3	7	5			22	862	N. Car.
North Dak.			347		3	87	56	57		255				18	1				1	2		2		5	834	N. Dak.
Rho. Island	5	1	65		6	49	23	24		10	3	2		18			3	1	1		5	1		7	224	R. Isl.
South Car.			216		3	149	42	25	1	10				3	1				1	3	3			2	460	S. Car.
Utah			62			53	6	22		16	1			1					2	3	1	1		1	169	Utah
West Va.			138		1	72	18	61	9	46			3	20	1			1		6	2	1		3	382	W. Va.
Wisconsin			438	23	6	331	51	57	2	80	9	1	1	24			6	8	8	6	3	2		27	1083	Wis.
Dist. of Col.	1	2	84	3		69	7	10	1	4	1		2	9			3		1	2	4			1	204	D. of C.
Totals	53	29	3531	96	73	2460	423	774	35	787	105	24	10	295	11	1	22	27	22	51	94	8	9	247	9187	Totals

the Roosevelt

a new car to sell for less than $1000

A CAR FOR ALL